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COMPUTERWORLD

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NEWSPAPER

Mini slump catching up to AS/400?

IBM puts on happy face despite flattening sales

BY ROSEMARY HAMILTON
CW STAFF

IBM will not hear of it, but it now looks as if there is a chance that the Application System/400 — its golden child and overnight sensation — will not grow up to be such a lasting success.

The big question is, now that its enormous pent-up demand is nearly satisfied, where will the AS/400 go from here? IBM likes to think that the sky is the limit. However, industry analysts contacted last week suggested that the firm had better think again.

"It's predominantly a replacement box," noted Don Young, an analyst at Sanford C. Bernstein & Co. "After the initial surge, the growth will reflect the overall poor industry setting for midrange computers."

Analysts said there is little hope that this proprietary general-purpose minicomputer will do well in the cutthroat midrange market that is moving toward open systems and server architectures. Unless IBM tailors the AS/400 to be a more

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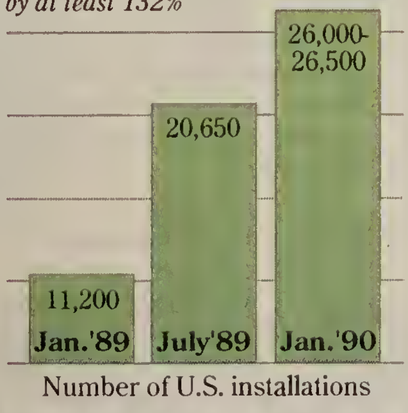
And still climbing

In one year's time, the number of U.S. AS/400 installations increased by at least 132%



Number of U.S. installations

SOURCE: COMPUTER INTELLIGENCE   CW CHART: MARIE HAINES

Morris verdict stirs debate

BY MICHAEL ALEXANDER
CW STAFF

STEPHEN D. CANNERELLI/SYRACUSE NEWSPAPERS

Morris leaves *court after felony conviction in Internet case*

SYRACUSE, N.Y. — A jury found Robert T. Morris guilty last week and in the process turned a computer wizard into a convicted felon. However, while the verdict sends a message that society may no longer tolerate computer pranks, it is not clear whether it will deter other criminal hackers.

A U.S. District Court found Morris, 24, guilty of illegally running a worm program on thousands of computers scattered across the country, preventing authorized users from using their computers for several hours to several days and causing them a loss of more than $1,000 (see story page 6).

Impact in doubt

The impact the verdict will have on computer-related crimes will probably depend on the strength of the sentence, according to several computer security and legal experts.

"If they had let him go, it would have been virus city out there, but whether it will be a deterrent over the long term is another story," said Ian Murphy, a self-described hacker and president of I Am Secure Data Systems in Philadelphia. "The hacking community will not be fazed" unless the penalty includes at least a fine and community

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DEC users reaffirm vows of loyalty

BY MARYFRAN JOHNSON
CW STAFF

The customers are loyal. The products are held in high regard. The service runs the gamut from acceptable to excellent.

So what explains Digital Equipment Corp.'s recent 44% nosedive in profits and its flattening sales picture?

Computerworld asked more than a dozen large DEC customers to share their impressions of the company and its sales force, focusing on any noticeable changes during the past year in discounting, deal-making, buying patterns and service.

Their responses reveal a sustained faith in the Maynard, Mass.-based organization as well as a generally upbeat feeling about DEC's future as an industry heavyweight. For the most part, they like DEC and enjoy doing business with the company — although several customers had suggestions for improvements.

Mini malady

The customers interviewed attributed DEC's sales slump in large measure to general economic malaise in the U.S. as well as migrating buying habits that are moving customers away from minicomputers and toward workstations and networked personal computers.

Yet there was also evidence of confusion and hesitation among heavily invested DEC customers about the glut of new technology from the vendor during the past 18 months. Some businesses are delaying purchases with an eye toward a better deal and higher performance

Continued on page 94

PC dealers: Good times over

Users may have to sacrifice service to get best deal

BY RICHARD PASTORE
CW STAFF

Customers who have grown accustomed to cut-rate prices and high-level services from their computer dealers may be in for a rude awakening. The rules are rapidly changing for the troubled dealer channel, and customers may have little choice but to play along, observers said.

Businessland, Inc.'s $1.2 million fourth-quarter net loss, which was announced last week, underscores the financial crisis dealers face from eroding margins. To survive, dealers — who accounted for more than 60% of all personal computers sold in the U.S. in 1989, according to International Data Corp., a Framingham, Mass.-based market research firm — must either specialize as value-added service providers or must eschew service and compete on box price alone. They no longer have the resources to do both, analysts agreed.

For customers, this either/or shift means the days of getting the best of both worlds from a

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UPDATE

As recession threatens, ponder this thought from the current best-seller *Tough Choices,* written by Warren Pelton, Sonja Sackmann and Robert Boguslaw: "All corporations must effectively contend with rapid change. Large organizations, however, can be painfully slow to change. Traditional approaches to business problems may not be effective, but they are familiar and comforting. In the face of uncertainty, those organizations headed by leaders willing to execute bold and innovative ways of meeting unique challenges are blessed."

ANDY FREEBERG

Bernstein's Reid extols distributed processing. Page 25.

MICHAEL NORTON

American Express' Robert Haas justifies his firm's plunge into ISDN just like any other telecom service. Page 49.

EXECUTIVE BRIEFING

■ **They got them ol' midrange blues again.** For a couple of years, the world has looked at DEC and IBM's AS/400 group as the comeback kids. Now, DEC's financial growth has taken an "oops" and there are signs that the AS/400 is approaching market saturation. Interviews with DEC users show that they have their complaints but are loyal to DEC. Meanwhile, some people have begun to think of the AS/400 as purely a replacement box that could face new problems in a market that demands open systems. **See stories page 1.**

■ **As organizations try to transform** their enterprises into a "fast-cycle" mode that permits quicker and more effective responses to competitive pressure, information systems play a key role. At Rank Xerox (UK), reshaping systems structure helped the organization redesign its old method of doing business and recover from a slump, tripling profits in three years. IS is not just a follower in this process. Information systems executives should be spreading the word about what's possible with technology advances so that business executives do not base planning on outdated assumptions. **Page 55.**

■ **Citicorp reached into Data General** in its search for a new top information systems official. The massive financial services organization hired DG Senior Vice-President Colin Crook as chairman of the Corporate Technology Committee. Crook takes the place of award-winning IS executive Paul F. Glaser, who moved on to head Citicorp's Quotron stock quote service. **Page 8.**

■ **The battle is on — Unix vs. OS/2** for command of the desktop. Which way will corporate America go? Don't count on OS/2 being a runaway winner, say IS managers and analysts. **Page 35.** Meanwhile, a closer look at Lotus' decision to port 1-2-3 to Sun Microsystems' workstations reveals that it was only logical that Lotus bypass companies such as DEC to choose Sun as the first nonpersonal computer platform. **Page 37.**

■ **The jury had its say** and found former Syracuse University graduate student Robert T. Morris guilty last week on charges that he set loose the worm that crashed systems throughout the Internet network. Morris, 24, faces a maximum sentence of five years imprisonment when he is sentenced, which will probably take place in the spring. **Page 1.**

■ **With all of the talk about hackers and worms these days,** Polytechnic University in Brooklyn, N.Y., has decided on a timely introduction to its course requirements for computer science students — a class in ethics. **Page 49.**

■ **On-site this week:** It may seem too tough to measure the value of a new technology such as Integrated Services Digital Network communications, but American Express has found that it can be done on a basis of cost savings and quality of service improvement. **Page 49.** That box the Godiva sales rep is toting isn't a box of high-class sweets bound for someone's Valentine. It's a portable computer that keeps the salesperson in touch with Godiva's home office. **Page 37.** A client/server architecture is at the IS heart of Sanford C. Bernstein. The investment firm has committed to a distributed strategy under which a mainframe gathers data, a minicomputer massages it and a workstation presents it to the user. **Page 25.** The University of California is treading a line between a move to a network based on the Open Systems Interconnect model and maintaining its commitment to the Transmission Control Protocol/Internet Protocol. **Page 43.**

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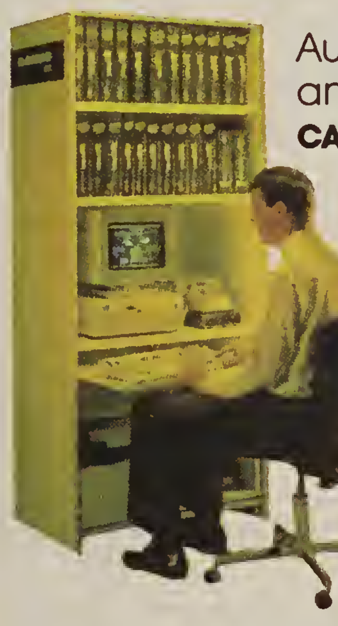

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Unruh assumes Unisys mantle

BY BOB MORAN
and PETER BARTOLIK
CW STAFF

When W. Michael Blumenthal pulled off Burroughs Corp.'s acquisition of Sperry Corp. in mid-1986, he forged a $10.5 billion company second in size only to IBM. Last week, Blumenthal effectively retired, leaving behind a $10.1 billion company struggling for profits and no longer holding onto second place.

Unisys Corp. announced last week that Blumenthal will be succeeded as chief executive officer in April by 48-year-old James Unruh, who will retain his current title of president.

"Our first priority is the restoration of acceptable financial performance," Unruh said in an interview Friday. "We do that by working on the cost side and on the asset management side."

While Blumenthal will retain for now the title of chairman, he and the company referred to the move as "his retirement." He will join the investment banking firm of Lazard Freres & Co. as a limited partner.

Scraping hard

According to Unisys user Robert Dever, vice-president of MIS at Liberty Travel, Inc. in Ramsey, N.J., Unisys — like virtually all computer vendors — has had to scrape harder for thinner margins. Given the new metrics in the industry, he said, it is wise to have a financial specialist like Unruh running operations.

Dever gave Blumenthal a mixed performance review during his tenure at Unisys: "In the early days, unquestionably he did a good job, but if he made any mistake at all it was in underestimating the effort that the merger would require."

The 1986 merger marked the highlight of efforts by the mainframe BUNCH — Burroughs, Univac (Sperry), NCR Corp., Control Data Corp. and Honeywell, Inc. — to evade the squeeze between IBM's dominance at the high end, cutthroat competition from minicomputers and the on-rushing personal computer.

Unisys' Unruh *takes reins from Blumenthal*

The years since have brought troubles from another flank, as the move to open systems and a gradually slowing economy have humbled even IBM and the once-brash minicomputer cadre led by Digital Equipment Corp., Data General Corp. and Prime Computer, Inc., among others. Like many older line companies, Unisys was forced to restructure and reduce its work force last year to combat higher costs, faster product cycles and to compete with its domestic and overseas competitors.

The problems for Unisys remain acute, said Michael Geran, a financial analyst at Nikko Securities International. "Blumenthal has done the restructuring and has taken a lot of responsibility for the time that it has taken to do it," Geran said. "It leaves Unruh to do the execution, but the proof is in the pudding — and it lies ahead."

In a prepared statement, the 64-year-old Blumenthal said that 1989 "was a difficult and disappointing year," adding that he believes the company is well positioned for growth in the 1990s.

Last week, the company reported a loss of $639.3 million for the year, compared with profits of $680.6 million for 1988. The company did manage to eke out a $34 million profit in the fourth quarter, despite revenue growth of only 2% to $2.9 billion, as cost-cutting actions implemented in October began to pay off.

Industry analysts were not surprised by the announcement of Blumenthal's departure. "It is the best thing in the world for Unisys that he has stepped down," said Casey Stern, a financial anaylst at Altman Brenner Wasserman & Co. Blumenthal, Stern said, was a genius at cost reductions, but "I don't think that he has been able to develop any products to generate the revenues."

Cost-cutting enabled Unisys to quickly weather the $4.8 billion cost of acquiring Sperry, as Blumenthal quickly dispatched Burroughs' Memorex subsidiary and various Sperry operations to eager buyers.

However, the merger bred an aggregate of platforms that have become even more complex, according to Donald Bellomy, an analyst at International Data Corp. in Framingham, Mass. "Those issues still have to be resolved, and the company is not the size to continue moving in six directions at once," Bellomy said.

Unruh conceded last week that carrying the product heritage of both Burroughs and Sperry is more expensive. But, he said, "we are bringing about more commonality between our proprietary platforms. . . We have major programs and investments in open systems, imaging and networking, and we are also making stronger commitments to the services side in addition to the hardware and software side."

Just a cheerleader

In a December 1987 interview with *Computerworld*, Blumenthal praised his team of managers, saying, "I am the cheerleader or the concertmaster from time to time, but essentially they run the company, and if *they* left, you'd have reason to worry."

One of the supporting cast, former Convergent Technologies, Inc. President Cyril Yansouni, who joined Unisys when his company was acquired in December 1988, said last week that the question of Blumenthal's retirement "was not whether, but when."

According to Yansouni, "It became visible last September, when Unruh was named president" and chief operating officer.

In fact, Unruh said, Blumenthal would have preferred to have left 12 to 18 months earlier but decided to stay on because of the changes that have been affecting the industry.

With Unruh replacing Blumenthal and sporting a strong financial background, "we really feel confident that we are starting to see a real turnaround of the company," Yansouni added.

West Coast Bureau Chief Jean S. Bozman contributed to this report.

DRAM supply to bulge

BY PATRICIA KEEFE
CW STAFF

An anticipated increase in the supply of 4M-bit DRAM chips is expected to push base memory configurations on personal computers to 4M bytes by year's end, removing at least one barrier to OS/2 acceptance.

At least two more suppliers are expected to join IBM in producing 4M-bit dynamic random-access memory (DRAM) chips. Texas Instruments, Inc. confirmed it is sampling 4M-bit chips in its own design and expects to start volume shipments next quarter.

Micron Technology in, Boise, Idaho, licensed IBM's 4M-bit DRAM technology last fall. A spokeswoman said Micron will probably make a 4M-bit chip.

An unconfirmed report last week said IBM will make an announcement about its 4M-bit chip soon. IBM is reportedly building the chip into its RT workstations and Personal System/2s.

An aggressive supply of 4M-bit chips, combined with declining memory prices and software's increasing need for memory, will serve to fuel the trend toward boosting internal PC memory, said Bruce Stephen, an analyst at International Data Corp.

Memory-laden PCs are expected to bolster efforts to proliferate OS/2 across the corporate desktop. It could also take the heat off Microsoft Corp., which has waffled on its promise to squeeze OS/2 down from 3M bytes into 2.5M or 2M, analysts agreed. Microsoft claims 4M bytes is sufficient to run OS/2.

IBM, Siemens in chip deal

BY JAMES DALY
CW STAFF

ARMONK, N.Y. — Scientists at IBM and West Germany's Siemens AG will put their heads together to develop a commercially available 64M-bit dynamic random-access memory chip by the mid-1990s.

Both firms already have substantial experience in submicron semiconductor development, having produced 4M-bit DRAMs last year and started independent development efforts to build 16M-bit DRAMs.

Also, IBM was one of the founding fathers of the ill-fated U.S. Memories cooperative, which aimed to free the U.S. electronics industry from a reliance on Japanese suppliers for future generations of chips.

IBM — the world's largest chip producer — uses all the DRAMs it makes in its own products, but Siemens will put its chips on the open market. Analysts said that with such a move, the West German electronics giant could score big in the newly opened Eastern European market. The 1990s will be "a decade in the sun" for Europe's semiconductor industry, said Dan Rose, at Rose Associates in Los Altos, Calif.

Although one of the chief goals of the effort is to defray the often astronomically high expense of chip development, IBM spokesman Paul Bergevin said the project will still cost "hundreds of millions of dollars."

The venture marks the first time both firms have jointly developed a computer chip, although they jointly operate the Rolm telephone business.

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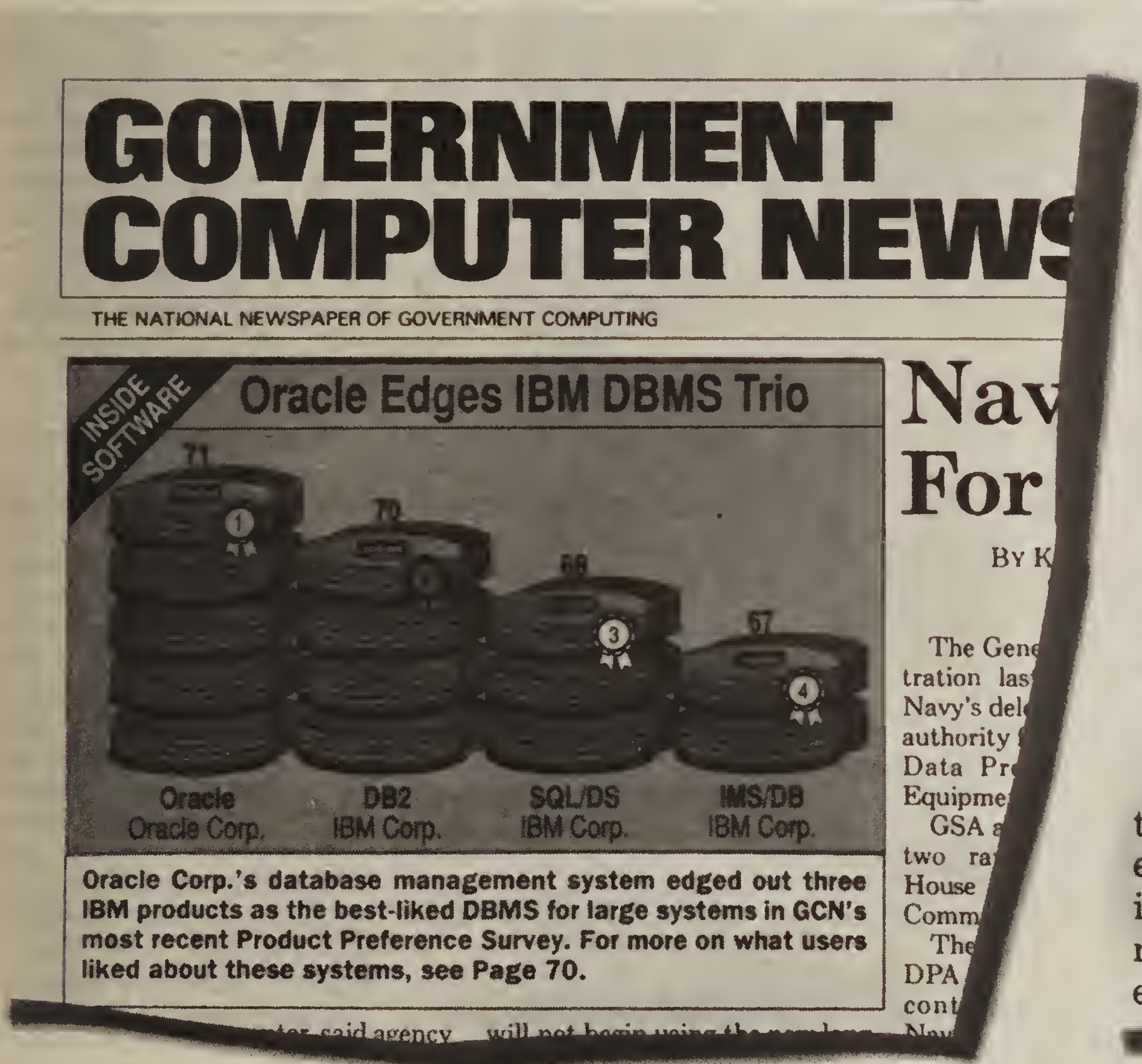
Oracle for IBM Voted Number One on Mainframe.

The Oracle database management system from Oracle Corp. received top marks in a recent GCN survey of federal DBMS users. IBM Corp.'s DB2 came in a close second.

Oracle satisfied its users best in seven of the 12 categories, winning particularly high scores for its hallmark features: distributed operation, SQL interaction and availability for multiple operating systems.



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INSIDE SOFTWARE

Oracle Edges IBM DBMS Trio

71
70
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3
4
Oracle
Oracle Corp.
DB2
IBM Corp.
SQL/DS
IBM Corp.
IMS/DB
IBM Corp.

Oracle Corp.'s database management system edged out three IBM products as the best-liked DBMS for large systems in GCN's most recent Product Preference Survey. For more on what users liked about these systems, see Page 70.

One Oracle user said, "Processing transactions and providing proper recovery across mainframes and midsized systems in a distributed environment is very important." Another said his organization had just signed a site license agreement to run Oracle on six large IBM systems and 258 Digital Equipment Corp. VAX minicomputers.

Respondents also liked Oracle's documentation, development environment and ease of administration.

DB2 users were less satisfied with its distributed operations and limited operating environment. One said, "DB2 is still playing catch-up to Oracle because DB2 does not provide a true client/server PC front end."

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Hey, it's not all gloom and doom

Some of the brightest profit news in a relatively bleak industry season surfaced last week, although pockets of gloominess continued to dampen prospects for any general rebound.

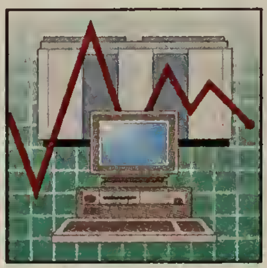
AT&T trumpeted "a year of excellent earnings — our strongest since divestiture six years ago," in the words of Chairman Robert E. Allen. The communications giant reported profits of $2.69 billion for fiscal year 1989, compared with a loss of $1.67 billion a year earlier that reflected a one-time charge of $6.7 billion in costs related to modernization efforts. In the fourth quarter, the company experienced profits of $705 million, compared with a loss of $3.34 billion a year earlier.

"It was a year in which AT&T became a trimmer, more responsive and more aggressive competitor," Allen said.

Lotus Development Corp. said fiscal 1989 profits jumped 15% to $68 million, or $1.61 per share over last year's net income of $58.9 million. Net sales for 1989 were $556 million, a 19% jump over the previous year's total of $468.5 million.

In the fourth quarter ended Dec. 31, 1989, Lotus' net income totaled $29.4 million, a 227% increase over the previous year. That rocketing increase was attributed to the December divestiture of the Lotus Information Network, a real-time financial quote service. Sales increased 33% to $150 million.

Sun Microsystems, Inc.'s efforts to dig itself out of the financial hole it stumbled into last summer continued to pay off. Net income for the second quarter ended Dec. 29, 1989 was $20.2 million, or 23 cents per share, triple the first-quarter profits for 1990, as revenue climbed 33% to $595.4 million. Although the profit was still well below the $29.5 million, or 36 cents per share, it reported a year earlier, the increase shows the effects that a wide range of cost-cutting measures have had on Sun's bottom line.



Ingres Corp. seemed to have put more than its old Relational Technology name behind it, as a first-quarter loss of $2.1 million gave way to a second-quarter profit of $1.5 million. That was still down from a year earlier, as revenue growth was blunted by increased costs from product enhancements and an aggressive marketing campaign.

Amdahl Corp. pumped up its revenue for the year by nearly $300 million over 1988 to $2.1 billion, but the cost of pumping IBM-compatible mainframes out the door took its toll on the bottom line as profits dropped $66 million to $152.9 million.

Amdahl blamed cost cutting, as fourth-quarter profits dipped by more than $30 million from a year earlier to $41.6 million.

Dragged down by the demons of the minicomputer niche, **Data General Corp.** reported a $17.5 million net loss on revenue, down 6% for its first quarter ended Dec. 30, 1989.

Morris

FROM PAGE 1

service, he said. Further, juvenile hackers do not fear prosecution if caught, Murphy said.

Morris, released on personal recognizance, and his attorneys plan to file posttrial motions in Albany, N.Y., on Feb. 27 in hopes of overturning the verdict. If unsuccessful, Morris will probably be sentenced in the spring. He could be imprisoned for up to five years, fined up to $250,000 and ordered to make restitution to those victimized by his malicious program.

Several computer security and legal experts said the conviction would probably not hinder Morris from pursuing a career in the computer industry or even in the federal government, although it is not likely that he would be entrusted with computer security. In his favor is the fact that his crime, although reckless, was not fraudulent, one law enforcement official said.

The experts could not agree, however, on whether the conviction would deter would-be Morrises from committing similar crimes. Nor could the experts agree on what should be an appropriate punishment for the former computer science graduate student.

"I am not sure the verdict alone will have an impact," said Gail Thackery, Arizona state assistant district attorney. "It depends on what the judge does on sentencing." It should certainly be "a sentence of some severity" if it is to deter other criminal hackers, she added.

"A jail sentence for a person who acted without malicious intent would strike most people as heavy-handed and takes a too narrow view of the problem if you are really trying to reach young hackers," said Marc Rotenberg, an attorney as well as the Washington, D.C., office director of Computer Professionals for Social Responsibility. "It is not enough to hold up Robert Morris and say he should go to jail. It is better that they understand why it is wrong to do what Morris did."

An appropriate sentence would be to require Morris to visit schools with computer science departments and talk to students about the importance of computer networks and why it is a mistake to engage in the sort of activities for which he has been convicted, Rotenberg said.

Morris has refused all comment following the verdict. On the witness stand he called the worm program a "dismal failure" and regretted having injected it into Internet.

STEPHEN D. CANNERELLI/SYRACUSE NEWSPAPERS

After verdict, Morris *leaves court accompanied by a companion*

"I am with the throw-the-book-at-him crowd," said Walter Ulrich, director of information and telecommunications consulting services at Arthur D. Little, Inc. in Cambridge, Mass. "Some jail time would be absolutely required because an electronic crime is no different than any other crime, and it should be treated as such."

A light sentence would send an unintended message that these sorts of violations will be tolerated, he said.

Following the verdict, Mark Rasch and Ellen Meltzer, the government's prosecutors in the case, refused to say what sentence they would recommend to Federal Judge Howard Munson. They also declined to speculate on whether the verdict would deter others from attempting similar offenses.

Legal experts said that the felony conviction of Morris proves that the Computer Fraud and Abuse Act of 1986 is tight enough to protect the nation's computers from tampering and attacks by viruses, worms and other malicious programs.

"It establishes a precedent that a person who creates worms and viruses can be held accountable," said David Newman Jr., an attorney specializing in computer law and an associate professor of engineering and applied science at George Washington University. "The hackers will continue and try to probe systems and get away with it, but cases like this show that they can get caught and prosecuted."

The guilty verdict also signals a change in the way that the nation views hackers and computer-related crimes, Newman said. "They are not folklore heroes; they are felons, and the fact that they used computers to do something wrong does not vindicate them."

"I suspect that some good will come out of this," said Kenneth Weiss, chairman and chief technical director at Security Dynamics, Inc. in Cambridge, Mass. "The people responsible for the security of their networks have been complacent, and Morris called attention to the fact that all of these systems can be gotten to by a single, simple program."

Jury found path through maze of computer law

BY MICHAEL ALEXANDER
CW STAFF

An hour and a half after jurors had begun deliberations in the trial of Robert T. Morris at the Federal District Courthouse in Syracuse, N.Y., last week, they sent a note to Federal Judge Howard Munson asking if they could have "a written copy of the law that he is accused of breaking."

Munson had already carefully explained the four relevant points of the 1968 Computer Fraud and Abuse Act that federal prosecutors were required to prove in his instructions to the 12 jurors, and the fact that they were confused was interpreted as a favorable omen for Morris by courtroom observers.

Instead of giving them a copy of the law, however, Munson called the jurors back into the courtroom and once again told them that they must consider whether Morris had done the following:

- Intentionally accessed federal-interest computers without authorization.
- Accessed computers that were in at least two states.
- Caused losses totaling more that $1,000 by accessing the computers.
- Prevented authorized users from using their computers.

"Federal-interest" computers are not necessarily computers owned by the government or used on the government's behalf but merely computers that are located in more than one state, Munson explained. The losses of $1,000 had only to be collective, not at each affected site, he added.

If there was a reasonable doubt about any one of those four elements, the jury must acquit Morris, the judge said.

Munson told the jurors that he did not want to give them a copy of the law because he concurred with the defense's objection that the statute contained other elements that were not relevant to the case and thus may confuse them even further.

Still, the jurors remained uncertain about the law, the foreman said. Munson opted to read the relevant parts of the law once again, this time amplifying each point a bit more. Apparently satisfied, the jurors returned to their deliberations.

There was little doubt about three of the four points — at least in the view of several courtroom observers.

More than a dozen prosecution witnesses testified that Morris did not have an account on any of the hundreds of computers attacked by the worm. They also said that it cost them some $150,000 in lost computer time and man-hours to eradicate the worm and prevent its return.

Was it intentional?

The only issue in dispute, at least in the minds of observers, was whether Morris intended to cause the damages that resulted from his worm. That question of intent was the keystone of the defense's strategy.

In his summation, defense lawyer Thomas Guidoboni told jurors Morris did not intend to paralyze anyone's computer and in fact had taken considerable pains to limit the worm's growth.

"This is a case about what was in this young man's mind," Guidoboni said. If you believe that Morris did not intend for the worm to cause harm, then you must come back with a verdict of not guilty, Guidoboni said.

About four hours after asking for a copy of the law — nearly six hours after they had begun — the jurors found Morris guilty.

DEC's ex now Prime's Shields

Former heir apparent to Olsen to lead long-time challenger

BY NELL MARGOLIS
CW STAFF

NATICK, Mass. — John J. (Jack) Shields, the former Digital Equipment Corp. marketing vice-president once viewed as the heir apparent to DEC President Kenneth Olsen, became president of minicomputer competitor Prime Computer, Inc. last week.

Whether the ex-DEC executive will be the answer to Prime's prayers is a question unlikely to be easily or quickly answered. However, having Shields at the helm of Prime could prove to be a source of nightmares for DEC if the seasoned veteran uses the occasion of rebuilding his new company to show his old one how the game is played, analysts said.

"This changes the whole game at Prime," said John Logan, president of Boston-based market research firm Aberdeen Group. He described Shields as an "operational player," apt to put his efforts into maintaining Prime.

Prime plus

Dennis Seymour, director of computer services at Olivet Nazarene College, a Prime user site in Kankakee, Ill., viewed Shields' advent as "a big plus for Prime." DEC, he said, "has been very successful on a much larger scale than Prime, and Shields has been a big part of that. Maybe he can help bring Prime up."

Shields said he can. He has his sights set on a $10 billion Prime, he said.

It is an ambitious goal for a firm that lately has proven neither a growth company nor a kind environment for chief executive officers.

Former President Joe M. Henson was driven out, according to industry speculation, by then-chairman David Dunn's dissatisfaction with Henson's apparent inability to transform Prime into a $2 billion company.

Henson's replacement, Anthony Craig, came to Prime with turnaround credentials from General Electric Co., revered as a breeding ground for tough-but-fair executives.

He led Prime through a debilitating, but ultimately successful, battle against a hostile takeover attempt and delivered it into the hands of white knight J. H. Whitney & Co., a New York-based venture capital firm — only to be replaced by James McDonald, the handpicked candidate of Whitney partner and new Prime Chairman Russell Planitzer.

Meanwhile, the saga of raider attacks and revolving presidents has successfully, if inadvertently, deflected attention from Prime's difficulty in digesting its late 1987 acquisition of computer-aided design and manufacuring player Computervision, Inc.

There is also the well-documented industry slump, which is taking a particularly heavy toll in Prime territory — both geographically and technologically. Shields, said one analyst who asked not to be identified, is an unlikely candidate to vault Prime past such obstacles. He comes to his new post with no proven turnaround credentials and without the charismatic leadership profile needed to guide Prime, according to the analyst.

"Back when he was at DEC, people there were crying out for leadership they felt they weren't getting," the analyst said.

Even if true, said other analysts, this may not prove critical. "Jack will bring some discipline to Prime, and Prime could use it," said Nili Young, vice-president of midrange strategies at Meta Group, Inc., a market research firm based in Westport, Conn.

Shields, 51, immediately took over as Prime's president and chief operating officer. At the end of a one-year transition, he will become CEO, according to Prime. Current CEO James McDonald, now also vice-chairman, will remain on Prime's board when Shields succeeds him.

Meet the new boss: *John J. Shields (left) with Prime's James F. McDonald*

CORRECTION

Because of a reporting error, it was incorrectly stated that commercial shipments of IBM's Officevision products have not yet begun [CW, Dec. 4, 1989]. Initial shipments began last September, as scheduled by IBM, with all Release 1 Officevision products shipped by the end of 1989.

Cell-Pac, a computer-integrated manufacturing software package, is now available from Andersen Consulting, not Arthur Andersen & Co. [CW, Oct. 30, 1989]. The correct telephone number is (312) 507-3296.

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NEWS SHORTS

AT&T takes ISDN international

AT&T last week announced what is said to be the first commercially available international Integrated Services Digital Network (ISDN), slated for Feb. 5 availability. The service allows customers to set up "on demand" 64K bit/sec. connections overseas to ISDN users in Japan and the UK using AT&T's Switched Digital International Service, the company said. Connections to other countries with ISDN services, such as France, are planned for the future, according to a company spokeswoman.

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DEC trims 235 factory workers

Digital Equipment Corp. recently trimmed 235 people from the payroll through a voluntary severance plan, which rewarded employees in its Salem, N.H., manufacturing operation for leaving the company. One industry analyst sees the program as a "prototype" for DEC to reduce its work force on a larger scale. "I think this is an experiment to understand all the implications," said Bob Randolph, a program director at Technology Financial Services in Westford, Mass. A DEC spokeswoman said 700 employees were offered the severance plan. "It might be offered again," she said.

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IBM fills in TCP/IP holes

IBM announced Transmission Control Protocol/Internet Protocol products for OS/2 last week, so that now it provides communications via the de facto networking standard across all of its major operating system families. Scheduled for March 30 availability, IBM's introduction also provides TCP/IP-based applications such as Telnet and File Transfer Protocol for OS/2. DEC is rumored to be preparing its own TCP/IP products for both Ultrix and VMS.

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Amdahl appeals Georgia ruling

Amdahl Corp. is appealing a Georgia State Superior Court ruling that said Amdahl cannot sue the state to keep it from purchasing IBM equipment. The suit, which was filed last year, charged that the state discriminated in the bid benchmarks to favor IBM, whose equipment was more expensive. While the court said Amdahl may sue for punitive damages, Amdahl attorney Steve Dix said that route would "defeat the whole purpose of the suit," which was to prevent installation of the IBM equipment. The IBM equipment cost more than $3 million above what Amdahl had bid, according to Dix. Amdahl is appealing the judgment.

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Bush names technology advisor

President Bush has nominated Eugene Wong, a former IBM researcher, to be associate director of the president's Office of Science and Technology. Wong, professor of electrical engineering and computer science at the University of California at Berkeley, worked at IBM from 1955 to 1962. In addition, Bush created a Council of Advisors on Science and Technology, which will have 14 members from the private sector.

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4M-bit chips to aid recovery?

Although the semiconductor industry expects little or no growth in 1990, it is counting on 4M-bit chips, new markets and high-growth niches to power it through the rest of the decade. William Reed, president of Semiconductor Equipment and Materials International, said 1990 will be a year of retooling for 4M-bit production, which will become the industry's mainstay. Firms that sell to the communications and industrial niches are likely to have more success than those that sell to the personal computer industry, he said. Application-specific circuit sales are expected to jump 10.8% this year, while PC memory chips sales are only expected to increase 4%. Burgeoning markets in the Far East and new opportunities in Eastern Europe will also buoy the industry in the coming years, Reed predicted.

MORE NEWS SHORTS ON PAGE 96

Citicorp taps DG exec as IS chief

BY CLINTON WILDER
CW STAFF

NEW YORK — Citicorp turned to the vendor community to appoint a career technologist to its highest information system management post last week, bucking the recent trend of tapping business-trained executives to head IS.

The nation's largest financial services firm hired Colin Crook, senior vice-president of minicomputer maker Data General Corp., as chairman of its Corporate Technology Committee. Crook, 47, joined DG in 1984.

Crook succeeds Paul F. Glaser, who was named to a new two-man team that will head Quotron, Citicorp's stock trading information subsidiary in Los Angeles. Glaser, who led Citicorp's pioneering adoption of automated teller machines and networking technology, has been the firm's top IS executive since 1982.

Crook has never worked in the financial services industry, but neither had Glaser when he joined Citicorp in 1973 after 15 years at TRW, Inc. As the first prominent IS chief hired in the 1990s, Crook's appointment may rekindle the debate about the most appropriate background for today's senior information executives.

"With globalization and electronic integration in banking, you're talking about giant technology complexity," said William Gruber, president of Research & Planning, Inc., a Cambridge, Mass.-based consultancy specializing in the strategic use of IS. "If you come from the business side, you might not even know what questions to ask."

Other observers questioned the move, however. "Citicorp seems to do things that are less than conventional, and I think less than positive," said M. Arthur Gillis, president of Computer Based Solutions, Inc., a banking IS consulting firm in New Orleans.

Glaser was named president and chief operating officer of Quotron; Leland H. Amaya, former chairman of Securities Industry Automation Corp., was named chairman and chief executive officer. They replace J. David Hann, who resigned as chairman and CEO.

AS/400

FROM PAGE 1

open, server-like system, analysts expect it will take a path of little growth, ending up as a small business host or replacement system for the System/34, 36 and 38 community.

The gloomy predictions grew louder earlier this month after IBM announced that fourth-quarter sales revenue from the AS/400 was flat compared with a year earlier.

Stephen Schwartz, IBM's vice-president in charge of the Application Business Systems division, came out swinging last week like a mother cat protecting its young. He attributes the current industry thinking to either misinformation or ignorance and claims that he will launch an education program next month that should set the record straight.

According to Schwartz, the AS/400 is far more than a replacement box and will continue to do well on at least two fronts — the departmental, or midrange, market and the small business arena.

First things first

First, the departmental issue. Schwartz said that the AS/400 has sold well as a general purpose departmental system and as a server. He suggests that more work will be done to make it more server-like in the future, but he would not provide details.

"Right now, the AS/400 is one of the most successful PC servers in the industry," Schwartz said. "There are three quarters of a million PCs already attached to AS/400s."

Asked if the AS/400 was functioning as a host or server to these personal computers, Schwartz said, "both as a small mainframe and data server.

"We have here a system that is already a server, and we will continue to enhance it in that way," Schwartz said.

To date, IBM has taken dozens of multiple-buy orders for the AS/400, which means the system is making it in the midrange market, Schwartz said: Multiple-buy orders, which are orders for 25 units or more, have added up to 10,000 units for IBM, he said. In that group, most orders were for 100 units or more, while a few have been for 2,000-plus units. He declined to specify who those 2,000-plus-unit accounts were.

IBM's Schwartz *argues for a healthy AS/400 financial future*

Schwartz offered the following examples as recent multiple-buys: the Department of Public Instruction for the state of North Carolina, with 100 AS/400s installed; the New York City Housing Authority, with 70 installed and plans to install 70 more throughout 1990; and the state of Kansas, with 22 installed.

On the surface, the number 10,000 sounds great. But since August 1988, there have been upwards of 80,000 units sold worldwide, depending on which industry estimate you use. Of those 10,000 multiple-buy units, 3,300 are installed or actual done deals, while the rest are only on-paper orders. Therefore, only a small fraction of the current installed base is operating as part of a multiple-unit AS/400 tier of a corporate network.

"The world is looking at a multitier computing model, and the AS/400 doesn't seem to fit as the middle tier very well," said Jim Cassell, a vice-president at Gartner Group, Inc. in Stamford, Conn. "Aside from price/performance improvements, they've got to make it appear to fit well in an enterprise strategy. MVS/ESA environments connected to OS/2 — that is understandable, and you can see you that will go forward. What you can't find is how the AS/400 will fit right in the middle of that."

Cassell said a major reason why the AS/400 does not seem to fit is the slow pace in which Systems Application Architecture (SAA)-compliant products have been brought to this platform.

"They have to get more SAA products on it. There's no CICS for it. They've got to improve the file system, making it an easier match with the rest of the SAA file systems," he said.

Schwartz said the company has made progress in moving SAA-compatible applications to the system and refers to the AS/400 as a "participant in SAA."

As far as the small business market is concerned, Schwartz took issue with it being characterized as a dead end.

"Sixty percent of the industry's revenue last year came from small and intermediate businesses," Schwartz said. "The system that can be the mainframe to those businesses has a hell of a future. There are 12 million small businesses who are going to make a [computer] decision in the next five years. That ain't bad."

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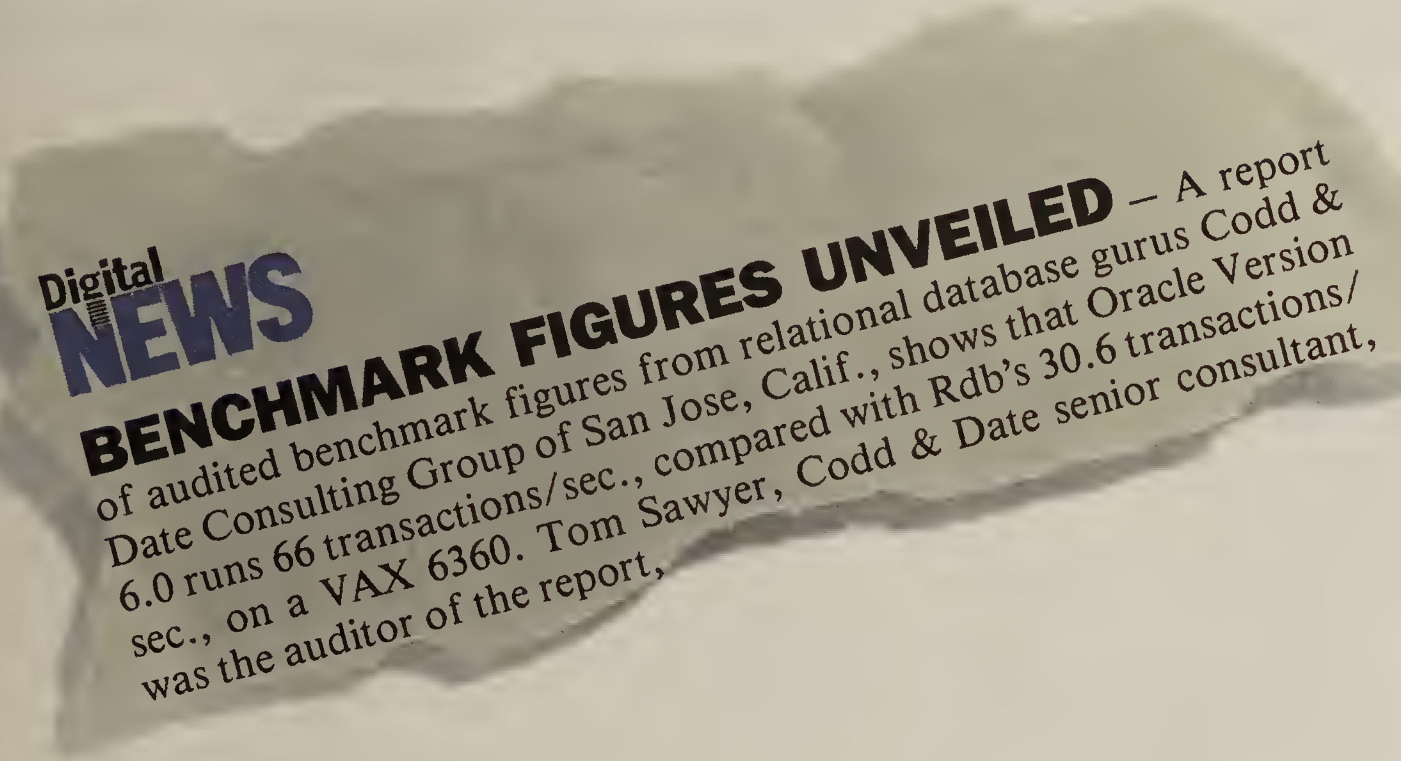

Digital NEWS

BENCHMARK FIGURES UNVEILED – A report of audited benchmark figures from relational database gurus Codd & Date Consulting Group of San Jose, Calif., shows that Oracle Version 6.0 runs 66 transactions/sec., compared with Rdb's 30.6 transactions/sec., on a VAX 6360. Tom Sawyer, Codd & Date senior consultant, was the auditor of the report,

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COMP.WORLD

Intel stakes out new ground with workstation, DRAM arrangements

BY JAMES DALY
CW STAFF

SANTA CLARA, Calif. — Intel Corp. continued to reach aggressively for footholds across the industry last week by unveiling its first entries into the workstation market and announcing a pact with a low-profile Japanese semiconductor maker that ensures the company a steady supply of vital memory chips.

The moves are the latest indication of the chip maker's eagerness to plant its flag on many hills. Earlier this month, Intel released plans for a supercomputer based on up to 128 I860 microprocessors working in parallel [CW, Jan. 8].

"There are a lot of synergies between the moves," said David Wu, an analyst at S. G. Warburg & Co. in New York. "It's easy for them to build the systems and just stuff the chips into them."

The introduction of the 80386- and 80486-based Microsystem series represents Intel's first move into the lucrative $6 billion workstation market, a product niche that market researcher Dataquest, Inc. claims grew more than 40% last year.

The Unix-based machines range in price from $6,295 for the low-end 80386SX-based Series 1000 to $14,595 for the Series 4000 machine, which uses the 80486. The top-of-the-line model will be capable of processing 12 million instructions per second. Intel will market the machines to other vendors, who will place their names on them.

So far, potential competitors are not worried. "They've promised a lot; we'll wait and see what's delivered," said a spokesman for Sun Microsystems, Inc., which bases a line of workstations on Intel microprocessors.

Under the chip marketing partnership, Intel will team up with NMB Semiconductor Co. to form a joint venture company called Intel/NMBS DRAMS Fabrications Co. The new firm will be managed by Intel. Each firm will also have a small equity stake in the other.

The move comes only a week after the highly publicized collapse of the U.S. Memories chip-making consortium venture [CW, Jan. 22]. Intel Chairman Gordon Moore said that while there is no direct connection between the two ventures, they stem from similar motivations.

Moore has said he expects the venture to generate $100 million in revenue for the company this year and more than $300 million in 1991.

Year of 386SX

Despite the hoopla surrounding Intel Corp.'s powerhouse I486 microprocessor, 1989 belonged to the humble 80386SX — Intel's compromise between affordability and high-end compatibility.

Despite a slowdown in personal computer sales last year, the 386SX managed to ship five times more volume than the 80386 and 10 times more than the 80286 in their debut years.

Intel hopes to build on this success with the 386SX 20-MHz chip, which began shipping in sample quantities last week. Systems powered by the 20-MHz chip and an SX cache controller can outperform 16-MHz 386SX-based systems by up to 40%, the firm said.

Analysts said the new, speedier version of the 386SX should be well received. "Having additional speed is always a plus," said Dean McCarron, vice-president of technology at Instat, Inc., a market research firm in Scottsdale, Ariz.

Intel plans to ship production quantities in the second quarter.

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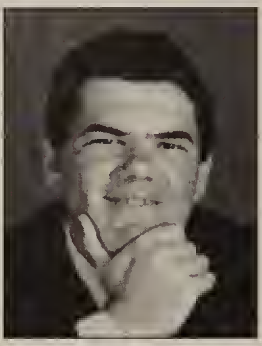
Still a long object-oriented haul

BY JEAN S. BOZMAN
CW STAFF

SANTA CLARA, Calif. — Object-oriented programming experts say the technology could cut into the traditional information systems applications backlog, but first they have to spread the news to the rest of the programming world.

At the SCOOP conference on object-oriented programming at Silicon Valley's Techmart last week, object-oriented technology proponents said they are still engaged in "missionary" selling, trying to convince clients of the benefits.

Objected-oriented programming has yet to become a major factor in programming within large corporations, said Philip Harkins, executive director at the Wang Institute of Boston University, which organized the conference. However, perceptions are changing. "Two years ago, very few CIOs even knew what [object-oriented programming] was," Harkins said. "A year ago, many knew what it was but didn't know how to apply it. Now, people are asking how they can use object-oriented programming to prototype applications."



Philippe Kahn

Philippe Kahn, president and chief executive officer at Borland International, predicted the technology will not be widely used until the object-oriented programming languages themselves start to resemble familiar products.

"Fundamental object-oriented programming will be as important in the '90s as structural programming was in the '80s," Kahn told last week's SCOOP attendees. He said, however, that object-oriented coding probably will not catch on until it breaks away from its early forms.

Hybrid languages, such as AT&T's C++, which combines elements of the C language with object-oriented concepts, could bridge the gap between pure object-oriented products and standard languages, Kahn said, adding that Borland has yet to field a C++ product.

Instead of relying on standard procedures, object-oriented programming draws "logical" lines between objects that mirror their real-world relationships. An object-oriented development system tracks the multiple links between objects, so programmers can view their program as a changing, growing entity.

Most object-oriented programming companies are start-ups, including Ontologic, Inc. in Burlington, Mass., which sells object-oriented database management system tools. "The elegance of the object-oriented model is its direct representation," said Tim Andrews, chief architect at Ontologic. "There are fewer lines of code, far fewer disk accesses — and both programmer productivity and database performance are improved."

Yet the results of preaching to corporate end users have been mixed, and progress has been regional. The most active members of the object-oriented programming community are computer scientists, programmers in object-oriented venture start-ups and programmers working with object-oriented tools.

DG adds symmetry to Aviion line

BY MARYFRAN JOHNSON
CW STAFF

WESTBORO, Mass. — Data General Corp. weighed in last week with several new additions and upgrades to its open systems line of Aviion servers and workstations.

Claiming to have the first symmetrical multiprocessing workstation on the market for less than $20,000, DG officials introduced the AV 400 series of midrange two- and three-dimensional graphics workstations in four models priced from $9,500 to $42,890.

In addition, DG introduced the AV 4000, a new series of entry-level server or multiuser systems, plus another four server models that are second-generation machines to the 5100 and 6100 server lines.

The Aviions make up DG's new reduced instruction set computing (RISC) product line, which is based on Motorola, Inc.'s 88000 RISC chip. The systems run DG/UX, the company's version of the Unix operating system.

Most of DG's revenue, however, still comes from its proprietary MV line.

Robert Cameron, an industry analyst at the Boxboro, Mass.-based office of Dataquest, Inc., said the new systems are mainly a fill-in-the-line offering from DG. The only odd notes are the new graphics workstations.

"DG does sell workstations into the technical market, but it's such a small business for them," Cameron said. "It's not a piece of their strategy, which has stronger commercial bias to it."

Stan Dolberg, marketing manager for open systems at DG, said the company is trying to present a complete product line in response to requests from third-party software developers, who often need enhanced graphics capabilities.

The new graphics workstations are also of interest to users such as Tom LaMarche, data systems manager at the Maricopa County Flood Control office in Phoenix.

The county has been buying Aviion systems with the intent of eventually moving over its extensive technical database and office automation software, which now resides on DG's proprietary MV40000.

Within the next month, the systems manager said a Transmission Control Protocol/Internet Protocol link will be installed on the MV40000, connecting the minicomputer to his Aviion workstations and server.

"We want to be able to do everything through one tube that talks to a lot of different boxes," LaMarche said. "The Aviions have a lot of potential that way."

One area that still worries LaMarche, however, is the lack of available software. While 185 vendors have announced plans to port their software to the Aviion platform, only about half are available now.

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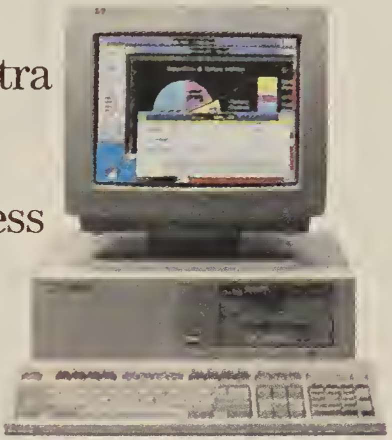

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Early users rate Microrim upgrade

BY SALLY CUSACK
CW STAFF

Hoping to bump Ashton-Tate Corp. and Borland International off the database software pedestal — or at least push them a bit closer to the edge — Microrim, Inc. last week announced Version 3.0 of its R:Base relational database management software system for DOS platforms.

"The latest release allows us to edit all program routines in real time," said Jim Sheehy, a beta-test user and vice-president of research and development and director of MIS at Superior National Insurance Co. in Calabasas, Calif. He is currently testing the software on Intel Corp. 80486- and 80386-based compatibles.

Developed with the first-time database user in mind, Version 3.0 provides a graphics-based, pull-down user interface, cascading menus and several Help functions. A fully integrated 100% ANSI Level 2 SQL that runs within 640 bytes of memory has been added for sophisticated database application developers.

"The SQL function has been immensely helpful for coding in applications," Sheehy said, adding that he wishes it had been available four years ago when the firm was heavily involved in application development.

Don Mongeau, supervisor of accounting systems at the Sacramento Municipal Utilities District, sees the report and forms construction features as the most helpful additions for novice users: "Microrim has increased the Help facilities available during data entry so that users can request help without leaving the application," he said. "I do some training, and so far, the software looks easy for beginners."

While beta-test-user response has been enthusiastic, industry analysts are taking a more conservative line. Nancy McSharry, an analyst at International Data Corp. in Framingham, Mass., sees Version 3.0 as a good, solid product but does not believe that it provides anything particularly unusual in the database arena.

Conceding that the graphical interface is "really very nice," McSharry does not think 3.0 will dip into Ashton-Tate's Dbase or Borland's Paradox market share. Microrim claims an installed base of 650,000 users.

LAN of integrity

However, Greg Maris, an industry analyst at Dataquest, Inc. in San Jose, Calif., observed that the software might be more appealing to users in larger corporate environments. "The ANSI SQL data-integrity features, as well as the data-integrity rules, are more useful in a local-area network configuration than they would be a onesy-twosy-type of user situation," he said.

R:Base 3.0 provides validity checks and lookups and has been configured to prevent users from inadvertently corrupting the database. A referential table integrity function ensures data integrity when changing relational data within a given table.

Rocky Mountain Banknote Co., based in Lakewood, Colo., is using the release for inventory control applications on a 24-node Novell, Inc. network. Twenty-three of the nodes are a combination of 80386- and 8088-based personal computers, with the 24th node functioning as a server. About 10 users are on the system at any given time, said Paul Fullerton, the firm's senior programmer.

Fullerton uses the program to track shipment traffic among the firm's 18 outlying plants. "There is so much new stuff," he said. "Version 2.11 didn't have the data entry forms, functions or any decision-making capabilities. It had a limited calculation capacity. Release 3.0 addresses all of those issues."

R:Base 3.0 is scheduled for release in late March. The regular upgrade price for any user of R:Base for DOS, Version 2.11 or earlier, is $175. First-time user pricing has been set at $725. The R:Base 3.0 Network Six-Pack costs $995, and an unlimited user version sells for $995.

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Unix developers lobby for support at Uniforum

BY AMY CORTESE
CW STAFF

WASHINGTON, D.C. — The future of Unix has never been so clear and yet so hazy.

At last week's Uniforum 1990 conference, Unix International and the Open Software Foundation (OSF) laid out detailed plans for their rival versions of the Unix operating system. While both of the groups' supporters rallied around their respective victories, negotiations to spin off Unix development from AT&T could soon have them cheering for the same team.

Unix International, the AT&T advisory group made up of Unix System V licensees, disclosed its long-promised Road Map, meant to guide AT&T's Unix development. Following on the heels of the well-received System V Release 4 — an amalgamation of the major Unix variants in use — Unix International laid out requirements for the evolution of Unix System V.

Road Map calls for staged releases of System V, incorporating enhanced features such as high-level security in late 1990, symetric multiprocessing and transaction processing in mid-1992 and distributed computing in 1994.

In the meantime, OSF bolstered its position with demonstrable progress on OSF/1, its own version of Unix that is to be based on the Mach kernel from Carnegie-Mellon University and elements of IBM's AIX.

OSF announced that the first snapshots — early working versions of the operating system intended to give vendors a head start — had already been shipped to members. OSF members from IBM, Digital Equipment Corp., Hewlett-Packard Co. and others were on hand to pledge support of OSF/1. In an attempt to dispel doubts about their commitments to OSF/1, the vendors stated plans to migrate their current Unix-based operating systems to OSF/1.

OSF's eleventh-hour decision late last year to scrap its original plans and bring in the Mach technology appears to be paying off.

If all goes according to plan, a November release would give OSF a jump on Unix International by providing key features more than a year before System V will.

However, a lot could happen in a year to make Unix International's Road Map and OSF's plans just an exercise.

There are signs that negotiations between AT&T and several OSF members to become joint owners of a spun-off Unix Software Operation are progressing. Sources close to the negotiations said last week that AT&T had conceded that its price was high and had come back to the negotiating table with a new offer.

Technology gaps closing

BY AMY CORTESE
CW STAFF

WASHINGTON, D.C. — The first major Unix industry event of the decade held signs of promise that some of the missing pieces that have held Unix back are starting to come together.

At last week's Uniforum 1990 conference, there was tangible evidence of progress as vendors demonstrated products that bring transaction processing and fault tolerance to the Unix world.

"This is the first [Unix] show you could walk around and see companies that could say they have solved some of the problems, at least as far as technology goes," said Don Tapscott, managing director at DMR Group, Inc., a Toronto-based market research firm. He cited the proliferation of fault-tolerant and transaction processing products but said that it would take a while for these products, along with graphical user interface applications, to filter into the commercial market.

On-line transaction processing (OLTP) for Unix is becoming a hot area as vendors rush to fill the gap in the Unix market for commercial OLTP systems. Recently, several hardware and software products have been announced, and many were demonstrated at Uniforum.

Longtime proprietary vendors such as Unisys Corp. and Bull H. N. Information Systems, Inc. are setting their sights on the burgeoning commercial Unix market, hoping to capitalize on the proprietary OLTP experience. Unisys said it will make a Unix OLTP announcement this spring that will involve AT&T's newly announced Tuxedo transaction processing monitor.

Transaction processing is also the initial focus of an X/Open Ltd. Specification Review Process, giving vendors an opportunity to test a proposed technology before it becomes an X/Open specification.

Firms running mission-critical applications requiring 100% uptime have an increasing number of alternatives in the Unix world, as a flurry of fault-tolerant products have been introduced.

Springtime Unix

Following Tandem Computers, Inc.'s recent Unix debut, Stratus Computer, Inc. last week announced spring delivery of a Unix-based operating system for its XA 2000 Continuous Processing Systems. Integrated Micro Products, Inc., a Santa Cruz, Calif.-based maker of Unix-based fault-tolerant systems, introduced the XR 655, a new model based on the Motorola, Inc. 68030 microprocessor, pushing its high end up to the 10 million instructions per second range. The system starts at $130,000.

Joseph Barriero, vice-president of systems and product development at EBS, Inc., a wholly owned subsidiary of The Travelers Corp., attended Uniforum. Each year, he noted, he is seeing "more and more for the Unix environment." EBS is basing its automation systems for Travelers' many agencies on multiuser Unix systems. Barriero said he is looking for interoperability with the MS-DOS world, as well as transaction processing capabilities for EBS' next generation of applications.

Users laud distributed network tools

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — Unix virtually stands alone when it comes to providing the networking tools needed to support multivendor distributed computing, according to managers of user organizations attending last week's Uniforum 1990 conference.

Keynote speaker Lt. Gen. James Cassity Jr., a joint staff officer responsible for providing communications and computing for all armed forces operations, labeled Unix the armed forces' model for open systems. It is "rich in communications utilities and protocols, a mature operating system today and developed with the idea of one system talking to another."

The Alabama Cooperative Extension Service (ACES) decided to integrate 700 DOS users in various state and local agencies via Unix, in combination with AT&T's Information Systems Network switch, because Unix seemed most flexible, cost-effective and "powerful enough to serve users on campus" and at remote sites, an ACES spokesman said.

Boston-based investment management firm The Putnam Companies chose Unix as the basis for its distributed computing environment "because the interoperability tools were there," said Putnam systems architect Edmund Zaharewicz.

Putnam's systems staff has used tools such as Sun Microsystems, Inc.'s Network File System and Remote Procedure Call and Hewlett-Packard Co.'s Apollo division's Network Computing System to create object definitions for key resources, such as databases and applications and make them accessible to users from anywhere on the network, he added. "With distributed computing, you can use the machine that's best for the task."

Less helpful to Putnam's systems staff have been vendor efforts toward "open system" standards that would provide transparent migration and interconnection across proprietary computing environments.

"Nothing is happening yet with open systems to help us that would let the multivendor network act like one machine," said Putnam Vice-President Steven Levy.

Users also voiced reservations about the initial, painful migration to such standards. "The introduction of standards is like the introduction of yet another proprietary specification," said a member of the audience at one conference seminar.

Not all users were so pessimistic, however. Standards could potentially save McDonnell Douglas Corp. a lot of cost and trouble in its current effort to migrate from a "mainframe-driven to a distributed workstation environment" for its computer-aided engineering and design systems, according to James Longshore, who is managing the project. Standards will ideally save the aerospace giant from having to rewrite user interfaces and retrain users every time it implements a major innovation, Longshore said.

McDonnell Douglas' interim solution, in the absence of complete standards, is to "use international and national standards where they exist, take our best shot at the ones that don't," Longshore said.

Product rollouts beckon to Fortune 500 companies

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — Unix may finally transcend its roots in academic, government and engineering sectors, expanding its commercial forays into a full invasion of Fortune 500 businesses via their networking installations, if developments at last week's Uniforum '90 conference pan out.

Announcements at the show link Unix to networking environments that figure heavily in big businesses' strategies, particularly those based on IBM's Systems Network Architecture and the Open Systems Interconnect (OSI) standard. Introductions included the following:

- Systems Strategies, Inc. announced what it claims is the first Unix-based product to utilize IBM's Common Programming Interface for Communications (CPIC), which was recently licensed by X/Open.

Part of IBM's Systems Application Architecture, CPIC is said to provide applications with a common set of commands for calling the networking functions of IBM's LU6.2 peer-to-peer networking protocol.

- Rabbit Software Corp. in Malvern, Pa., announced a commercial version of Rabbitplus APPC, an OEM product that is said to allow Unix users to establish peer-to-peer connections with IBM hosts via IBM's LU6.2.

Several vendors announced Unix implementations of the OSI X.400 electronic mail standard, promising to "put more meat on the higher levels" of Unix-based communications, said Thomas Nolle, president of Haddonfield, N.J., consulting firm CIMI Corp.

- Touch Communications, Inc. announced Touch/MP Fastport/OSI Streams, which is said to allow Unix V.3 systems to communicate via OSI protocols, including X.400. Sun Microsystems, Inc. also announced a partnership to port Netwise, Inc.'s Remote Procedure Call Tool onto Fastport, providing users with a platform for developing OSI-based distributed networking applications on top of Unix.
- NCR Corp. announced what it said is a full set of OSI-based communications products for its Unix-based NCR Tower family, including X.400, FTAM and X.500 directory services.
- X/Open Company Ltd., the international vendor consortium for developing common open systems protocols, announced that it will work with the X.400 API Association to ensure consistent specifications for E-mail applications to access X.400 and X.500 servers.

Dial to clean up shop through outsourcing

BY CLINTON WILDER
CW STAFF

PHOENIX — The Dial Corp. wants to wash its hands of the IBM mainframe world and has turned to outsourcing as an interim step to help reach that goal.

Over the next five years, the maker of Dial soap and other consumer products will migrate from a centralized, IBM 3081-based information systems operation to a network of Digital Equipment Corp. VAX midrange systems based in its three divisions. While Dial recasts its applications for the DEC world, Andersen Consulting will run its mainframe operations and telecommunications [CW, Jan. 15].

The move represents an unusual but possibly trendsetting use of outsourcing as a short-term accommodation of processing needs during a major IS transition. Most firms that have recently committed to outsourcing have done so for up to 10 years, with no stated intention of bringing operations back in-house.

Dial "only has a certain amount of energy to focus, so they will focus on the transition as opposed to running the existing data center," said Rudy Puryear, a managing principal in the Chicago office of IS consultancy Nolan, Norton & Co. "It's a little bit analogous to letting someone else handle the maintenance of a system while you're doing some new development."

In the beginning . . .

The genesis of the plan began three years ago when Dial, a $925 million susidiary of The Greyhound Corp., split into three divisions responsible for personal care products, household cleaning products and foods.

MICHAEL NORTON
Dial's Tekien

"We began to think that [an IS structure with] one large box serving everyone no longer fit that environment well," said William Tekien, director of IS.

Adding to Tekien's concerns was a 3081 running out of capacity, an aging applications portfolio and the kicker — a necessary relocation from a leased building here to a Greyhound-owned facility in Scottsdale, Ariz.

"Given our strategy of de-emphasizing mainframe work, it didn't make sense to face the cost of building a new mainframe data center in Scottsdale," Tekien said. Dial sought proposals from several outsourcing vendors and chose Andersen.

Dial atone

Dial will pay Andersen up to $10 million to take over mainframe operations, telecommunications services, systems software maintenance and technical support. If Dial completes the DEC migration in less than five years, it will pay less. "That's a maximum figure, not a committed figure," Tekien said. "We'd like to expedite our transition." He declined to reveal Dial's current IS budget.

Dial will retain all applications work. Andersen will run Dial's Phoenix data center until the move to Scottsdale in late spring, then transfer Dial's processing to a 3090-based Andersen data center in Dallas used by four other Andersen outsourcing clients. Dial will eliminate 13 data center operations jobs, according to Tekien.

Although Andersen is much better known for IS consulting, programming and systems integration work than data center operations, Tekien said Dial will tap Andersen's consulting services only "on a limited scale" during the transition to the DEC environment.

Puryear said that Dial's strategy of interim outsourcing solves the point-of-no-return dilemma potentially facing companies that outsource parts of IS.

"The question always is, 'If they decide to bring it back in-house, is there a smooth way to do it?' It sounds like Dial is defining the conditions for that up front," Puryear said.

John Oltman, Andersen's managing partner of integration services, predicted a growing demand for interim outsourcing by companies that want to "leverage their ability to participate in building new distributed systems."

DEC's solitary support of OSI leaves users edgy

BY ELISABETH HORWITT
CW STAFF

MAYNARD, Mass. — The promise of expanded global networking capabilities with Digital Equipment Corp.'s soon-to-be-released Decnet Phase V has quickened the pulses of information systems departments that had tired of Phase IV's limitations.

On the other hand, users indicated that they will put off migrating to the new system's vaunted Open Systems Interconnect (OSI) version until it is supported by other vendors besides DEC.

While the lower levels of Decnet Phase V networking will be fully compliant with OSI protocols such as CCITT 802.3 Ethernet, the system will have two sets of upper-level networking protocols and applications: one OSI-compliant and the other a proprietary version of Decnet, according to Decnet Phase V marketing manager Steve Kelly.

This "backward compatibility" will facilitate migration of applications and users, as well as ensure communications between the two types of systems, Kelly said.

Phase V's dual architecture will also allow users to take advantage of the system's expanded capabilities without having to commit to full OSI compatibility — an option that is likely to appeal to more than one Fortune 500 company.

Bankers Trust Co., for example, "expects to start migrating to Decnet Phase V as soon as it is available to us" but has no immediate plans to migrate to OSI, according to Stan Rose, a vice-president of technical architecture: "The problem with OSI is that having an open system only works if you have someone to talk to."

Bankers Trust is not alone in its perception that OSI is still a long way from delivering multivendor interoperability.

Tyson Foods, Inc., now in the process of converting from Unisys Corp. systems to DEC and Decnet Phase IV, would love to be able to use OSI now to standardize connections with brokers, shippers and other business partners, said Tyson staff analyst Paul Lothian. But, given limited OSI support among key vendors, Tyson is sticking with Decnet IV — at least in the near term — and developing its own outside links, Lothian said.

Even if OSI benefits remain long-term at best, Decnet Phase V packs some powerful distributed networking tools, which have strong appeal for DEC shops that have been struggling to coordinate resource sharing across complex global networks. Bankers Trust, for example, is waiting for Phase V's naming server and expanded addressing system, which purportedly will make access to corporatewide resources both easier and more controllable, Rose said (see story at left).

Phase V's expanded addressing is also a crucial feature for the University of California, whose researchers find Decnet IV's 63,000 address limit increasingly harsh as they access computing resources at other institutions around the world, according to Werner Schmidt, assistant director of academic computing/systems.

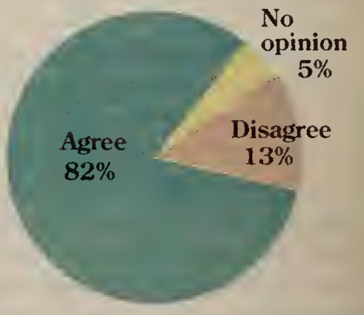
The university differs from Bankers Trust, however, in that Phase V's OSI compatibility "is the main reason why we are going with it," said Claudia Jordan, the university's manager of data communications.

OSI and OSI-based applications, such as X.400, are expected to provide the glue for interconnecting academic, research and government institutions around the world, according to Schmidt. Today, organizations communicate on regional networks dominated by Decnet Phase IV and Transmission Control Protocol/Internet Protocol, "but it's rather difficult to address [resources] across" networks using the different protocols, he added.

Marketing gap

A recent survey of 100 IS executives indicates that OSI is having little impact on them

OSI is still in development and not widely available from vendors



Percent of respondents

SOURCE: BUSINESS RESEARCH GROUP CW CHART: JOHN YORK

Hoping to accelerate the arrival of usable OSI products from the major vendors, the university has proposed itself and its network as an OSI interoperability test site. While it foresees OSI dominating communications in the 1990s, the university also expects many of its sites to continue using their existing networks for some time to come. For this reason, backward compatibility and interoperability with Decnet Phase IV will be one of Decnet Phase V's most important features, Schmidt said.

Phase face-off

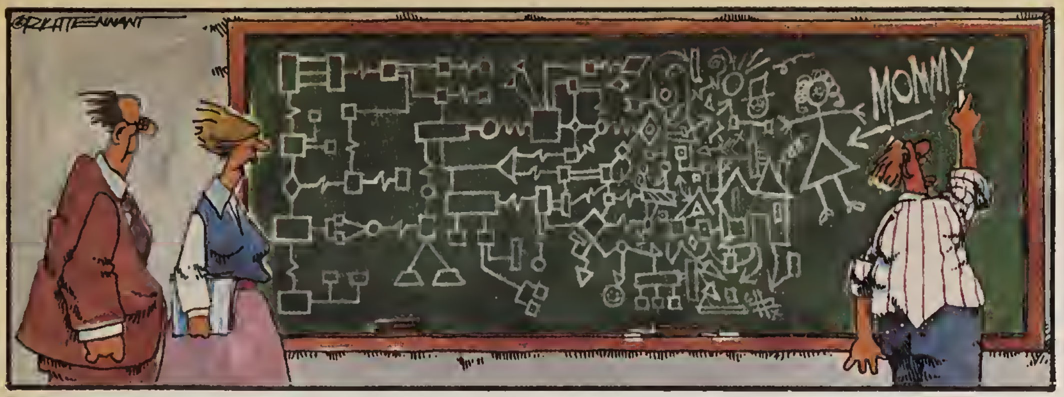
Apart from Open Systems Interconnect (OSI) compatibility, the principal difference between Digital Equipment Corp.'s Decnet Phase V and Phase IV is that the older system "is optimal for bringing up and connecting departmental networks," while the new system was designed to address "the move toward enterprisewide networks," according to Decnet Phase V marketing manager Steve Kelly.

Phase V will incorporate a number of features and enhancements that address the need to make the right resources available to the right user across such networks. Among the items promised for the system's initial introduction in September are the following:

- Expanded addressing. Whereas Decnet Phase IV can handle up to about 63,000 network addresses, Phase V is said to have virtually no limits.

The addressing scheme also allows the network manager to subdivide networks into geographic or function-related areas and control what resources those subnetworks can access, Kelly said. In contrast, Decnet IV defines a single network on which any user can access any resource, he added.

- Directory naming servers designed to keep track of the location of various resources. The service will eventually become compliant with the OSI X.500 directory standard, enabling Decnet users to transparently access the resources of other vendors' OSI-compliant networks, Kelly said.
- Backward compatibility with Decnet IV, allowing companies to migrate to Phase V, one subnetwork or even system at a time, and still maintain interoperability between the two types of networks, Kelly said. Migration from Phase IV to Phase V involves implementing a new version of either Ultrix or VMS, which supports the new Decnet, Kelly said.



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   - **70.** Mining/Construction/Petroleum/Refining/Agric.
   - **80.** Manufacturer of Computers, Computer-Related Systems or Peripherals
   - **85.** System Integretors, VARs, Computer Service Bureaus, Software Planning & Consulting Services
   - **90.** Computer/Peripherel Dealer/Distr./Retailer
   - **75.** User: Other ______
   - **95.** Vendor: Other ______ (Please specify)

2. **TITLE/FUNCTION** (Circle one)

   IS/MIS/DP MANAGEMENT
   - **19.** Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
   - **21.** Dir./Mgr. MIS Services, Information Center
   - **22.** Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; Dir./Mgr. PC Resources
   - **23.** Dir./Mgr. Sys. Development, Sys. Architecture
   - **31.** Mgrs., Suprv. of Programming, Software Dev.
   - **32.** Programmers, Software Developers

   OTHER COMPANY MANAGEMENT
   - **11.** President, Owner/Partner, General Mgr.
   - **12.** Vice President, Asst. VP
   - **13.** Treasurer, Controller, Financial Officer
   - **41.** Engineering, Scientific, R&D, Tech. Mgt.
   - **51.** Sales & Mktg. Management

   OTHER PROFESSIONALS
   - **60.** Sys. Integrators/VARs/Consulting Mgt.
   - **70.** Medical, Legal, Accounting Mgt.
   - **80.** Educator, Journalists, Librariens, Students
   - **90.** Others ______ (Please specify)

3. **COMPUTER INVOLVEMENT** (Circle all that apply)
   Types of equipment with which you are personally involved either as e user, vendor, or consultant.
   - **A.** Mainframes/Superminis
   - **B.** Minicomputers/Small Business Computers
   - **C.** Microcomputers/Desktops
   - **D.** Communications Systems
   - **E.** Local Area Networks
   - **F.** No Computer Involvement

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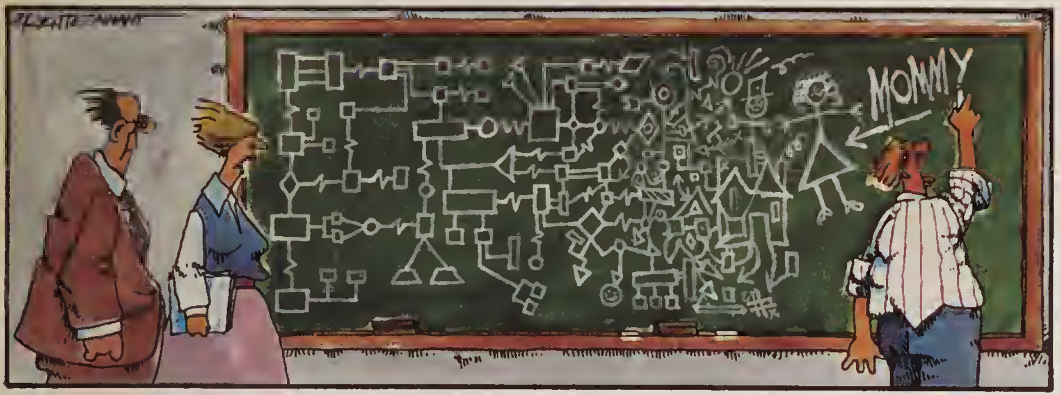

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   - **40.** Wholesale/Retail/Trade
   - **50.** Business Service (except DP)
   - **60.** Government - State/Federal/Local
   - **65.** Communications Systems/Public Utilities/Transportation
   - **70.** Mining/Construction/Petroleum/Refining/Agric.
   - **80.** Manufacturer of Computers, Computer-Related Systems or Peripherals
   - **85.** System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
   - **90.** Computer/Peripherel Dealer/Distr./Retailer
   - **75.** User: Other ______
   - **95.** Vendor: Other ______ (Please specify)

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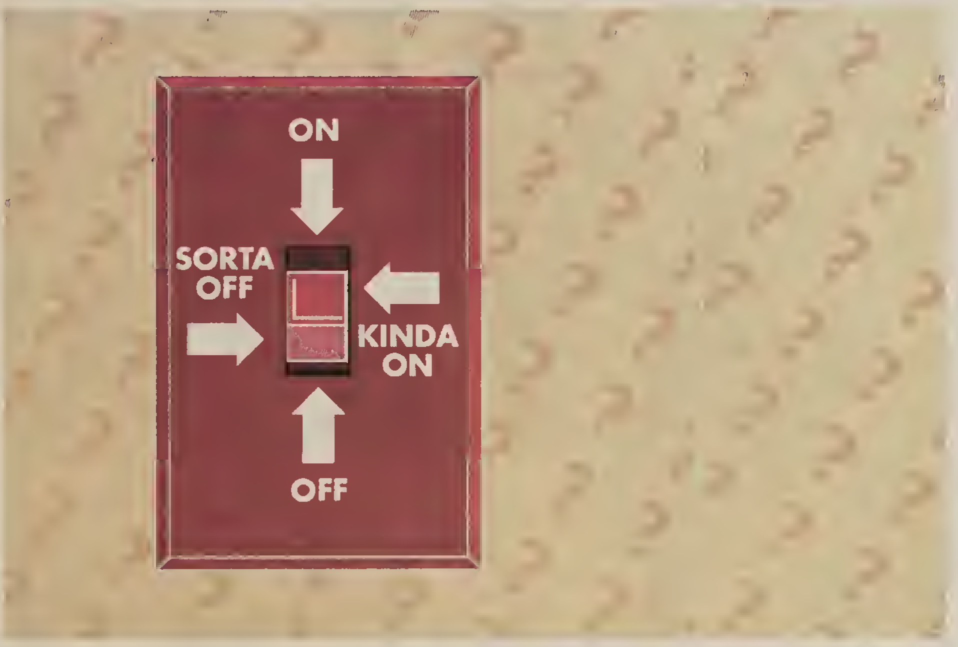
ADVANCED TECHNOLOGY

Fuzzy logic? Maybe; we're not sure

Less-than-logical computing starting to find its way into commercial products

BY J. A. SAVAGE
CW STAFF

And
Or
Not
— Traditional computer logic
Usually
I'm not sure
Huh?
— Fuzzy logic



TOM MONAHAN

When Lofti Zadeh introduced the idea that computers could act on shades of gray information instead of the traditional clear-cut yes/no operations currently used, he was often mocked by the scientific community, sometimes for little more than the unscientific name he attached to his theory — "fuzzy logic." But Zadeh, a professor of computer science and electrical engineering at the University of California at Berkeley, is having the last laugh 25 years later. The Japanese government and Japanese companies are introducing products based on his theory.

"The gain in acceptance has not been overnight, but there has been a quantum jump as a result of development in Japan," Zadeh said. He added that while Japan has only accounted for 5% of the academic research in fuzzy logic (much has been done in Europe, China and the Soviet Union), it is leading efforts to commercialize the technology, and other countries will have to follow suit.

Some of the products include a trading program for Yamaichi Securities Ltd. on the Tokyo market, which often responds to fads as well as the economic logic used in Wall Street, train controls, auto-focus cameras, elevator controls and automatic transmissions.

Pushing the field is the Japanese Ministry of International Trade and Industry, which formed the Laboratory for International Fuzzy Engineering (LIFE) in 1988. Its board of directors includes the presidents of Hitachi Ltd., Toshiba Corp., Fujitsu Ltd., Matsushita Electric Industrial Co. Ltd. and seven others, lending the project immediate respect with the expectation of commercial success.

Since the computer science community in the U.S. has been resistant to fuzzy logic, few indigenous corporations have any basis for developing products using it. Countries without an established computer science oligarchy, like Japan, were not burdened with such set concepts and explored fuzzy logic.

Japan, adopting it in a nearly faddish way (including adding the English word "fuzzy" to noncomputer products such as toilet paper) set to making fuzzy logic a commercial success.

"Nissan patented a fuzzy logic transmission, Subaru has one, and Honda is experimenting with one," Zadeh said. "GM and Ford and Chrysler will find themselves in a difficult situation [if they don't act on such a product]. The same thing is going to happen in other fields." For example, Otis Elevator Co. recently sent a representative to a fuzzy logic conference because a Japanese elevator company already has a system for sale, Zadeh said.

Unclear thinking

Fuzzy logic is based on a percentage membership in a set. There are 1s and 0s, but data can be 80% of 1 or 12% of 1 without being an absolute 1 or 0.

For instance, a car can go "fast." If 150 miles per hour were 100%, idling would be 0. A fast "red" car would belong to two groups, fast and red, where burgundy may be 0 and crimson 100%.

Fuzzy logic can be in software, or software and hardware. Software sets include fuzzy predicates, fuzzy truth values, fuzzy probabilities and hedges, according to Zadeh. Fuzzy logic hardware carries current at differing levels of intensity to indicate values between 1 and 0.

One U.S. firm, Tongai Infralogic, Inc. in Irvine, Calif., manufactures a fuzzy logic reduced instruction set computing chip for embedded use, said Vice-President of Business Development Carl Perkins.

The fuzzy sets for its use are in external memory. Programmers can use Infralogic's expert systems shell to compile data in C, assembly or microcode, according to Perkins. Still, despite Infralogic's U.S. base, nearly all of its sales are to Japanese companies.

J.A. SAVAGE

Life at Bell Labs: Making high-tech's future today

BY MICHAEL ALEXANDER
CW STAFF

Nearly anyone with a smattering of computer knowledge can probably tell you that computers operate using transistors that are either on or off. Simple, even elegant — but not fast enough for the computers we will be using in the future.

Scientists at AT&T Bell Laboratories in Murray Hill, N.J., are now testing a multistate, resonant-tunneling bipolar transistor that may one day replace dozens of conventional transistors at a time.

The new device operates at up to 24 billion cycles per second (24 GHz), or twice as fast as a typical high-speed silicon transistor, according to Bell Laboratories scientists. "Whereas normal transistors have been limited to two states, on and off, this is the first transistor with multiple states, three or more," said David Lang, director of the solid-state electronic research laboratory at Bell.

Microelectronics is one of three core technologies under scrutiny at AT&T Bell Laboratories, one of the world's foremost research and development centers. Bell Labs designs and develops products and services for AT&T and conducts research in a wide range of areas. Over the years, scientists at the lab have come up with such innovations as the transistor, laser, solar cell, light-emitting diode and stereo recording. The lab has received nearly 30,000 patents.

Research and development at the lab — with an annual budget of $3 billion — focuses on three areas: microelectronics, photonics and software. Here is a quick glimpse at some of the projects that are under way:

- **Microelectronics.** Bell Labs produces several hundred new microchips and devices a year. Past chips include the first 32-bit microprocessor and million-bit memory chip.

COURTESY OF AT&T ARCHIVES

AT&T's optical amplifier *sends lightwave signals record distances*

Since 1986, the company has been developing experimental computer chips that may mimic the way brain cells retrieve stored information and solve problems. The electronic neural networks could lead to specialized machines that are able to perform tasks, such as visual perception and speech recognition, that living organisms now perform much faster and more efficiently than computers.

- **Photonics.** In photonics technology, lightwave systems use extremely rapid pulses simultaneously on a single glass fiber. In 1988, scientists transmitted light pulses a record 2,480 miles without regenerating the signals electronically.

Bell Labs researchers also built the photonic switching chip, a device that may be the primary building block of an experimental optical computer or switching machine. Such optical computers could eventually be 1,000 times faster than today's best machines.

- **Software.** Bell Labs also invented one of the world's most popular operating systems, Unix, which is now being used in AT&T computers and more than 2,000 companies and universities worldwide.

Nearly half of the lab's technical staff is working on software for telecommunications systems.

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At last! A new HP LaserJet for everyone.

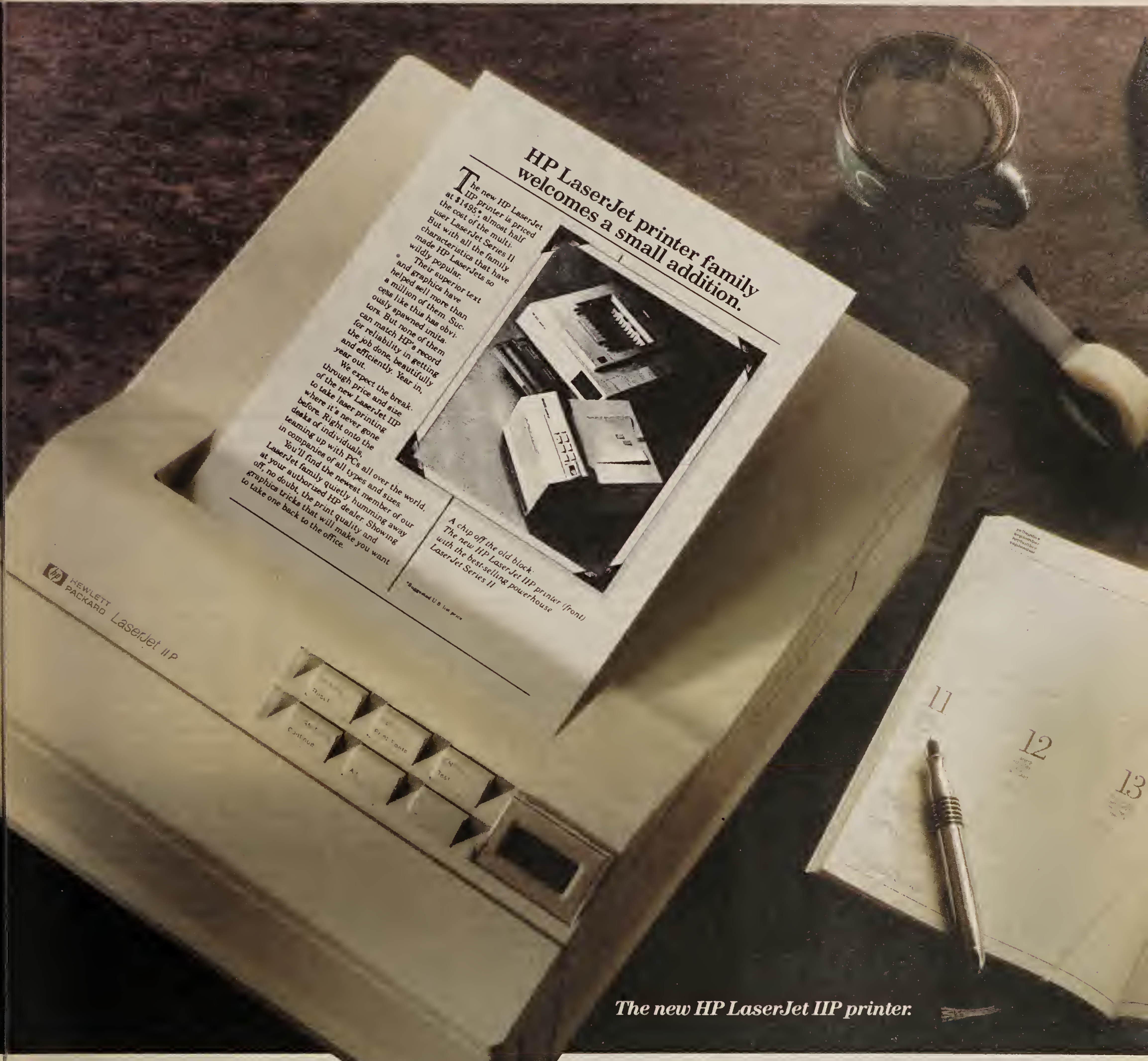
At only $1495*, it's got "personal" written all over it.

The HP LaserJet printer family has expanded—in a small way.

The new HP LaserJet IIP (as in Personal) fits on a desk. And, with a price almost half of the multi-user LaserJet Series II,* into most budgets.

Yet it's fully compatible with virtually all popular PC software and the LaserJet Series II. It has the same 300 dpi resolution. And carries on the family's reputation as the most reliable laser printers on the market.

*Suggested U.S. list prices:
LaserJet IIP $1495;
LaserJet Series II $2695.
Dealer prices vary.



HP LaserJet printer family welcomes a small addition.

The new HP LaserJet IIP printer is priced at $1495*, almost half the cost of the multi-user LaserJet Series II. But with all the family characteristics that have made HP LaserJets so wildly popular.

Their superior text and graphics have helped sell more than a million of them. Success like this has obviously spawned imitators. But none of them can match HP's record for reliability in getting the job done, beautifully and efficiently. Year in, year out.

We expect the breakthrough price and size of the new LaserJet IIP to take laser printing where it's never gone before. Right onto the desks of individuals, teaming up with PCs all over the world, in companies of all types and sizes.

You'll find the newest member of our LaserJet family quietly humming away at your authorized HP dealer. Showing off, no doubt, the print quality and graphics tricks that will make you want to take one back to the office.

A chip off the old block: The new HP LaserJet IIP printer (front) with the best-selling powerhouse LaserJet Series II

*Suggested U.S. list price

The new HP LaserJet IIP printer.

The LaserJet IIP was designed to be easy for any PC user. The simple front panel provides push-button control over the menu, the 14 internal fonts, form feed and other functions. It handles four different paper sizes: letter, legal, executive and A4, as well as envelopes. In portrait or landscape configurations. At four pages a minute. From one or two paper bins (the second is optional).

The 512K standard memory is upgradable to 4.5 Mbytes for more complex graphics and publishing programs.

So call **1-800-752-0900, Ext. 277J** for your nearest authorized HP dealer. Then introduce people at your company to their very own HP LaserJet printers.

There is a better way.

HEWLETT PACKARD

EDITORIAL

No comments

THE ONGOING SLUGGISHNESS in domestic computer spending is spawning some strange behavior — some predictable and some not so.

Picture this. A reporter is following up on a story about a company experiencing some serious systems problems in the field. From the sounds of things, this problem is likely not to be unique to this user; thus, there is all the more reason to pursue the story and let other sites know of possible danger.

The user tells us that its vendor is aware of the problem and is working on it. We call back a few days later.

Guess what? The customer no longer wants to talk about the problem. It seems as though the vendor has fixed the matter. It is also clear that part of the service agreement is for the user to remain button-lipped about the problem.

If this were a unique situation, we'd have no problem telling you just who the vendor was. But the fact is as growth in computer equipment sales has dipped into single digits and even crossed the zero line in some categories, the "aggressiveness" exhibited by the vendor community at large has shot up in the opposite direction.

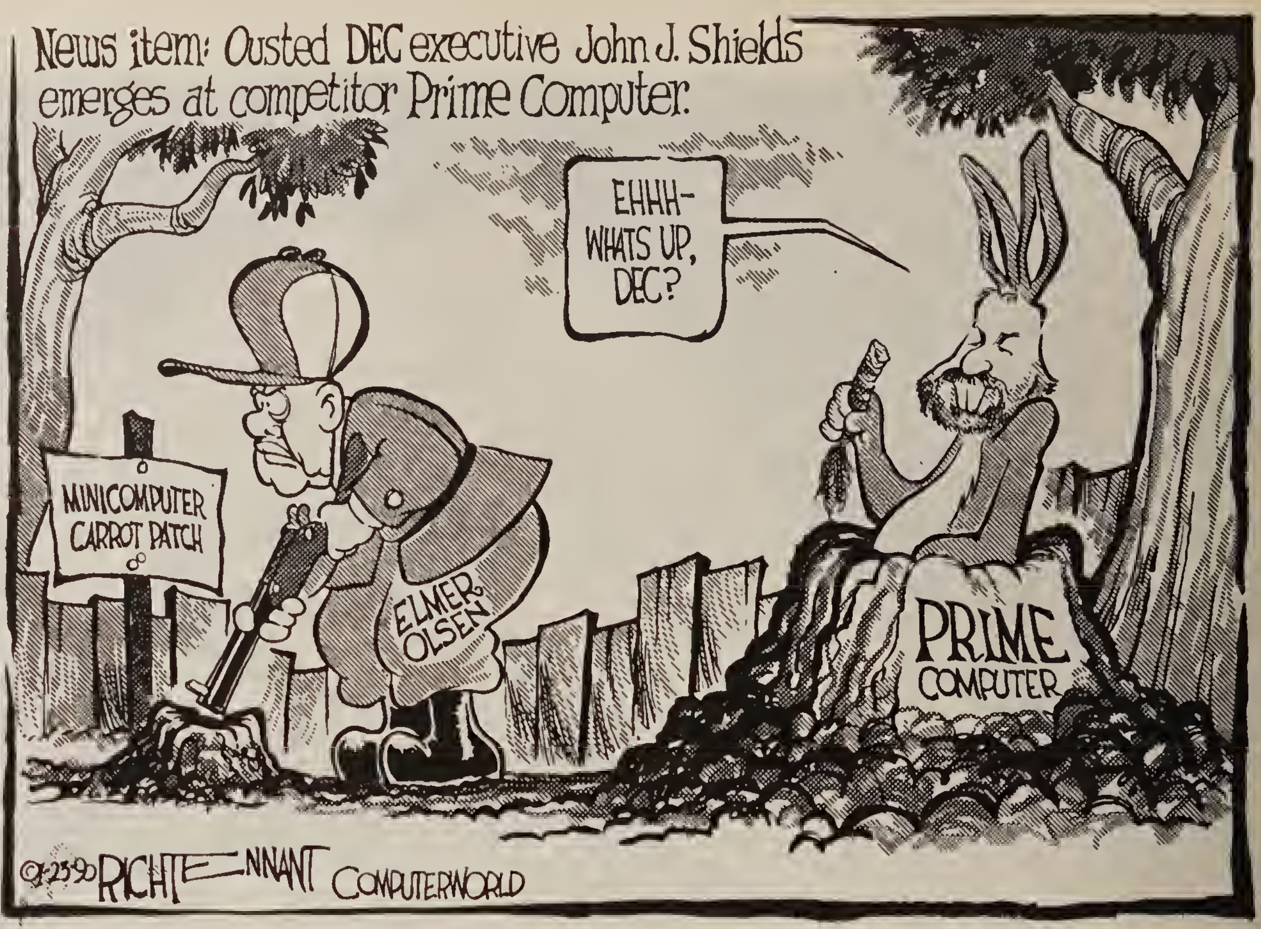
Of course, one of the beneficial manifestations of these tough times is some of the sweetest deals users have seen, at least since the last recession. Stories abound pertaining to the lengths Digital salesmen will go to avoid losing a sale to IBM, or of the extras IBM will include in a deal when going head-to-head with Amdahl. That's the in-the-trenches wheeling and dealing that is so much the essence of free enterprise.

But intentionally and willfully muzzling people — and that is exactly what we are talking about here — is a horse of quite a different color.

From a selfish perspective, this behavior just plain gets in the way of our doing our job. That job is to report on events and issues that directly affect the management of information systems. And when such events or issues reflect well on the vendor community (say, in the announcement of a new product or a big sale), the vendors are extremely accommodating to the media's efforts to get the news in print. Reporting on those stories is easy, and the information contained within them is of considerable value to the user base.

It goes without saying that customers are also very interested in information about potential problems that could affect their operations. We investigate them, report on them and then report on the efforts — prompt or otherwise — made to fix them.

In this kind of matter, we can't appeal to the freedom-of-the-press statutes contained in the Bill of Rights, because individuals have the freedom to speak or not speak to the press. Others have the right to persuade you to keep quiet. Instead, if you are approached with a "request" to keep things quiet and confidential, you might ask yourself just why that is being asked of you in the first place.


News item: Ousted DEC executive John J. Shields emerges at competitor Prime Computer.

LETTERS TO THE EDITOR

Undone calling

The article "It's the flu season for micros" [CW, Sept. 18,1989] by Michael Alexander hit a sour note for me. Toward the end of the article, Alexander mentions that "Many companies are evaluating call-back modems."

The idea is great, but it will take something from the regional Bell operating companies (RBOCs) to improve it. For those users who have the call-waiting feature, it sounds ideal . . . until you note that call waiting can be disabled only if you are the originator of the call. That means you can disable it when you call the computer but *not* when it calls you back, when you need it the most.

Are any of the RBOCs listening?

Bill Light
Programming Supervisor
San Jose Water Co.
San Jose, Calif.

Forgotten user

Regarding "Critics pan CA's Masterpiece" [CW, Nov. 6, 1989], I feel the article did not fairly represent the users' point of view.

Computer Associates International, Inc. invested three years working on the Master Host Environment (MHE). This new database was designed to work on DEC, IBM midrange and IBM mainframe computers and would allow a single set of application code for all machines. After long delays, the product was released in beta. Unfortunately, however, the product failed to satisfy its users; it even fell short of CA's own expectations.

I told *Computerworld* at the CA Masterpiece Users Group Conference that I was disappointed in the content of Version 2.0 General Ledger. Instead of getting all of the new functionality that we were promised, we would have to wait a little longer. However, I clearly said I feel CA's choice to abandon the MHE and go to CA-Datacom/DB will be best for all users in the long run.

While attending a user group meeting, one must keep a clear perspective on why such a group exists. The users inherently try to get a vendor to enhance the product to meet their own specific needs; hence, the tendencies are to talk about "enhancement ideas" and not about the product in general. User groups tend to emphasize the positive aspects of the products in their educational sessions and to talk about their enhancement ideas in public meetings.

I have been using the CA Masterpiece General Ledger and the CA Fixed Asset System for 10 years. In my opinion, the products have progressed at a very acceptable rate — both from a technological and user's point of view.

C. Hollis Esell Jr.
Chairman and President
CA Masterpiece Users Group

Chafed chairman

Your article entitled "Critics pan CA's Masterpiece' [CW, Nov. 6, 1989] had an inaccurate statement ascribed to me.

CA personnel have never *promised* us when they would provide us these features and improvements as stated in your article. State Use Tax and Federal 1099 reporting were just examples of the types of additional features and improved functionality, respectively, that we users, through the independent User's Group, are advising CA's financial product development people to include in the Accounts-Payable system.

Your article focuses on the "short-term" concerns of many users, but I was disappointed that you did not present the "long-term" perspective. CA's goal of establishing a "common platform" upon which it would operate a set of financial systems across all computers has been a goal every business has set for itself. We are impatiently waiting for CA to achieve this goal because of the competitive edge it will provide us in the marketplace. The impact on our administrative efficiencies and costs will be significant when CA reaches this goal. This is why we are very supportive of the CA-Datacom/DB decision in the long term.

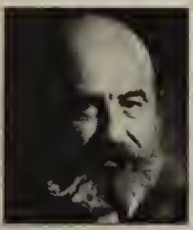
As a user of CA's products for 10 years, I can tell you that we would not be using them if we did not think they were and will continue to be the best. However, we are a very demanding group that keeps constant pressure on companies such as CA in order to ensure that we are utilizing financial software that is the best and to assure ourselves that it stays that way.

John W. Tower
Chairman
Accounts Payable Steering Committee
Alfa-Laval, Inc.
Poughkeepsie, N.Y.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

Backed up but into a black hole

CHARLES LECHT



Have any of you die-hard computerniks ever tried to read some of your older floppy disks on today's systems? I mean disks made on the old system you discarded when you got your new system. I did, and the experience was a depressing one, to say the least.

Try as I and my new trusty personal computer might, nothing I had saved on 5¼-in. floppies was readable. As I watched the display signaling I/O errors blazing with the options "Abort (A), Retry (R), Ignore (I)," I had the dreaded feeling that for years I may have been backing up my data into a vinyl, Mylar and plastic black hole — a place in computer space where things enter and never return.

To add a touch of irony to my dread, literature on the new system said that it was as compatible with my previous system as two peas in a pod. From what I was seeing, they were about as compatible as Felix Unger and Oscar Madison.

Fortunately, I still had the old PC on which the disks were written. I had been using the CPU as a base for an old television set (itself a relic of many years ago but still working). Desperate, I searched for the old display in my storeroom. It was still in the same place I had left it alongside those one-day-to-be-fixed electronics I have a habit of keeping.

I connected the CPU and display, energized them and heard the groan of the hard disk booting an early version of DOS. The display wavered then showed the message "Parity Error," which is a signal that there may be death on a memory board — usually a chip. After removing one memory board and pressing a few chips here and there, we, my old computer and I, got over our parity problem. Unfortunately, we were confronted with a string of messages made up of those mysterious letters and numbers that make you groan and search for the DOS manual error messages list, which in my house is never handy.

After several more tries — a euphemism for "shutting the thing off and rebooting again" — the C:> prompt appeared. I uttered a sigh of relief and promptly responded with COPY A:*.*, whereupon the data from the first unreadable disk flowed like water onto the still groaning but now available PC hard disk.

This was repeated over and over until all of my writing for a year or more became more or less recoverable again. Of course, it was recoverable only on the old system so now if I wanted to keep it, I had to keep the old thing alive. Needless to say, I'd rather dump the whole mess than crawl away from my gleaming 80386 with OS/2 to once again become a servant to the lumbering 8088 DOS nightmare from which I'd been freed.

DEBORAH WITHEY

I guess I could have bought one of those new add-on disks, hooked it up (to either my old system or the new one) and written all the old stuff out again on new 3½-in. vinyl, Mylar and plastic, but I didn't want to make the investment in time and money to finagle with the thing to make it work. Let's face it: You just don't go and slap on a new peripheral, crank it up and watch the thing go.

The "stuff" I was recovering was not necessarily worth the potential trouble to save it. So, I put the old PC processor back under the TV and the display in with the one-day-to-be-fixed stuff and then trashed the entire mess of unrecoverable disks. What a thrill — I dumped a black hole in a garbage can.

Then the sober thought hit me that I may have to go through this again with the output of my new system in another few years. With each new media for computer backup, an entire world of technology is needed to ensure its usability in the future. That world is always missing.

Using the systems of those computer manufacturers still with us, the data we put on magnetic media gets progressively more distant: Stuff from the 1980s may still be readable, the '70s only partially, the '60s mostly unreadable, and the '50s is lost forever. I've got a better chance of playing my old Buddy Holly records than seeing that data again.

Those defunct manufacturers have for the most part left us at a dead end. Each wave of new technology seems to sweep clean the repository of human experience recorded by users of earlier waves, and the time between each wave has been getting ever shorter.

Most people naively view their backup media (disks and tape) as if they were safety deposit boxes. Where else could we cheaply and safely leave the voluminous and valuable data we create? Nowhere! What does all this mean? Maybe that very little of what we create with a computer is worthwhile even though we are doing more and doing it faster. I hope not. The universal rule that governs all things is surely working here, too — what's done fast doesn't last.

Anyway, until the backup media problem is solved, if you want to keep something in storage for more than a few years, try carving it into stone or wood or printing it (ye gods, I said it) on paper.

Lecht is an IDG News Service correspondent based in Tokyo.

Dear IBM: You're playing with distribution fire

IBM WATCH

NATALIE STEELE ARMSTRONG

The following represents a composite of user experiences based on how IBM's recent shifts in distribution strategy have affected the typical midrange user.

Dear IBM:

I have long been a user of System/36 hardware. In the beginning, I ordered your products from my local IBM sales representative. Things were smooth and simple. Then, a few years ago, you announced new marketing channels. Suddenly, my world turned upside down.

Soon after you established the value-added reseller (VAR) program, I received a call from a remarketer. The remarketer offered me discounts on all the IBM hardware I was considering for that budget year.

However, when my IBM representative came to visit, he convinced me that it would be a mistake to buy from a VAR. He told me that if I pursued the VAR relationship, the local IBM office would close my file and ship it to Siberia. I was very grateful to the representative for saving my job. I gladly gave up any thought of discounts in exchange for the security my IBM representative assured me I would enjoy.

A year later, near Christmas, my IBM representative came to me again and begged me to get my order in by year's end so that he could make his 100% Club sales quota. I agreed. However, when it came time to order, my representative showed up with that same dreaded VAR.

My representative explained that the only way he could guarantee delivery of the new System/36 by year's end was to place the order through the VAR. I was horrified! I told the representative that I didn't mind waiting for IBM to work through its backlog and could even take delivery in January or February. At that the IBM representative fainted.

Finally, with much fear and trepidation, I ordered my new system from the VAR. To my surprise, the system arrived on time and was installed without a hitch. Over the years, my company developed a strong relationship with the VAR. We came to rely on the VAR's ability to deliver equipment quickly when we needed it.

Now it appears we are on the edge of yet another marketing redirection. I called my VAR this morning to place an order and was told that he couldn't fill it. It seems as if his new arrangement with IBM requires that any hardware he sells me has to come with the vertical application I am seeking to implement on the new system. He didn't have the application software I needed.

I was told to deal with an agent assigned to me by IBM. This agent would supply hardware at list price rather than discount. I am confused.

I hope you can shed some light on these changes. Also, please clarify which system we should buy. We had planned on replacing our System/36 with an Application System/400 this year. We had decided on the 9406 Model B50. However, because of the loss of the discount and the uncertainty surrounding future support, we have decided to wait until next year.

Instead, we are upgrading our current 5360 Model B25 to a D2M and purchasing it through a used equipment broker. Meanwhile, we've heard rumors of a new system that is supposed to replace the AS/400. It is a Unix-based machine called RIOS. Should we buy that instead?

Please respond quickly. Yesterday, our controller said his cousin's wife is selling Digital Equipment Corp. equipment, and maybe we should look to see what they have to offer. That would at least keep it in the family. Right now, I feel as if IBM has put me up for adoption again.

Sincerely,
An Information Systems Manager

Users such as this one are questioning IBM's recent strategy shifts, which are apparently aimed at ending heavy VAR discounting while lining them up under clear vertical category headings.

IBM's change in policy was driven by the success of the Industry Remarketers (IR) program. During the past four years, the number of IRs has grown from a few dozen to close to 500. It became the strongest channel in terms of sales volume. The only problem was the heavy discounts IRs were allowed to offer on IBM equipment.

These discounts forced other IBM Business Partners and the direct sales force to compete on price rather than on product, support and service. As a result, IBM marketing representatives found themselves doing all the legwork for an account, only to lose the sale to a large "Super VAR" on price advantage.

Such VARs operated on discounts approaching 30% and 40%. Under the new rules, discounts will be limited to 15%.

By limiting IRs to vertical application-oriented sales, IBM may gain control of the distribution channels for its equipment, but the company will risk losing sales as users who have become accustomed to discounts and VAR relationships consider their options.

Steele Armstrong is editor of the "The Midrange Hot Sheet" and a marketing executive for Link Computer Corp. in Altoona, Pa.

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SYSTEMS & SOFTWARE

SOFT TALK

Amy Cortese

If you can't beat 'em . . .

It used to be that proprietary computer vendors would just as soon throw their arms around a grizzly bear protecting her young than embrace Unix and open systems. Come to think of it, many proprietary computer vendors resembled that ferocious grizzly.

However, with standards now becoming inevitable, computer vendors have stopped resisting. In the great spirit of "if you can't beat 'em, join 'em," firms such as IBM are taking control of evolving standards and shaping them in their favor.

The resulting standards efforts have been led by unlikely groups of vendors that would seem more natural flogging each other in the marketplace than sharing technology. Apparently, the cumulative influence of a

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Inside

- Investment firm learns tricks of client/server trade. Page 25.
- With Cyber sales flat, CDC turns focus to Unix. Page 25.
- Intergraf boosts technical workstation line. Page 28.

It's a fine, fine line for CPUs

ANALYSIS

BY J. A. SAVAGE
CW STAFF

The technology that was at the heart of the 4M-bit memory chip has suddenly burst onto the scene on the CPU side of the semiconductor business as computer makers have introduced the first submicron processors for the masses in recent weeks.

The vendors, including Motorola, Inc. and Hewlett-Packard Co., hold out the promise of quadrupling raw CPU speed within the next few years as they adopt the submicron technology previously used in the manufacture of dynamic random-access memory (DRAM) chips. Production processes associated with the technology may also allow CPUs to be made more cheaply. The first systems are slated to arrive in late 1990.

That DRAM technology — the ability for machines to etch pathways into silicon at less than one millionth of a meter wide — allows for higher speeds because electrons have to travel shorter distances on the chip, according to Doug Andrey, director of industry statistics for the Semiconductor Industry Association.

The fineness of etching associated with a 4M-bit DRAM chip is 0.8 microns. HP last month outlined its plans to use 0.8-micron technology in most of its minicomputer processor line, thus doubling the raw CPU power of its high-end minicomputers. Weeks later, HP took the first step toward fulfilling that promise by introducing the HP 3000 Series 980/200.

HP expects "well over 90%" of its CPUs to be in the submicron category in two years, according to Eric Larson, integrated chip marketing manager at HP at the Northwest Integrated Circuit Division.

Other vendors are on the submicron path. For instance, an Intel Corp. spokesman said he expects submicron CPU chips to be available in 1991. Intel's current 80486 uses 1-micron etching.

The sensitive machinery needed to create 4M-bit-type CPU chips is available. "It's just a question of money," said Dragan Ilic, general manager of HP's integrated circuit division.

Submicron technology was first used in DRAMs because the greater number of memory chips in a system made the benefits more immediate.

While the price of that equipment stands in the millions of dollars, the prices of the chips produced with it could be lower than existing chips because they

Continued on page 28

A step below

The 68040 announced last week by Motorola is among the first submicron microprocessors

[illegible]	[illegible]	[illegible]
1979	68000	3.5
1984	68020	2.4
1987	68030	1.5
1990	68040	0.8

* Microns

SOURCE: MOTOROLA, INC. CW CHART: MARIE HAINES

Knowledgeware moves to exploit multitasking

BY ROBERT MORAN
CW STAFF

ATLANTA — Knowledgeware, Inc. recently began shipping beta-test versions of its Application Development Workbench that exploit the Presentation Manager multitasking services of OS/2 Extended Edition.

According to the company, which is a strategic partner in IBM's AD/Cycle program, its Application Development Workbench/Design Workstation and ADW/Construction Workstation have been shipped to 16 beta-test sites in various industries and will become commercially available by the end of this quarter. Prices have not yet been established.

ADW is a set of four integrated computer-aided software engineering tools designed to automate the planning, analysis and design of high-level programming languages and IBM's Cross-System Product, which is an applications generator and fourth-generation language.

The company said that missing pieces — ADW/Planning Workstation and ADW/Analysis Workstation — will be available in the second quarter of this year.

Easy to get along with

ADW, which requires OS/2 Standard or Extended Edition, Release 1.2 and an IBM Personal System/2 Model 50 or larger platform, is compliant with IBM's Common User Access guidelines.

Under OS/2 Extended, for example, users will be able to concurrently design applications in one window, generate Cobol code in another and compile and test in another, according to the company.

"Although Knowledgeware's base product [Information Engineering Workbench] has windowing built into it under DOS, the multitasking capability under OS/2 offers the possibility of performing different activities simultaneously," said one beta-test site user, who requested anonymity.

By eliminating DOS memory limitations, the user said, "doors are being opened that will enable us to make more effective use of the tools."

The company said it will also offer discounts to its existing DOS-based Information Engineering Workbench customers to convert to the OS/2-based version.

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Client/server investment pays

ON SITE

BY JEAN S. BOZMAN
CW STAFF

NEW YORK — A distributed client/server architecture in which workstations serve as windows onto Wall Street and minicomputers act as way stations for information churned out by mainframes is changing the way a 23-year-old investment firm does business.

The paper, pencil, handheld calculator and 30-second delays in mainframe processing have given way to almost instantaneous on-line responses to the needs of portfolio managers at Sanford C. Bernstein & Co.

Digital Equipment Corp. minicomputers and Microvax servers act as way stations or nodes on an enterprisewide Ethernet network. Under the architecture, data that used to be stored in a central IBM mainframe is moved to the VAXs and thus closer to the end users who repeatedly request the data.

"This is part of a larger business revolution," said Bernstein's MIS director, George E. Reid. "It's saying that the rules of going into and out of the glass house are entirely within the control of MIS. But it's also saying that, given a disciplined organization, you can manage that information in a distributed way."

According to Reid, the beauty of distributed processing is that it imposes the traditional IS techniques of network management and security on what otherwise would be a chaotic jumble of workstations and personal computers. Because of its modularity, the network could be expanded to accommodate hundreds more DEC and Sun Microsystems, Inc. workstations and IBM-compatible PCs, he said.

Computers are a key to attracting new business when managing pension-fund investment accounts worth tens of millions of dollars, noted associate MIS director Paul M. Bagnoli. The firm managed nearly $13 billion in assets in 1988.

During the last two years, Bernstein's IS staff placed 220 workstations on portfolio managers' desks, dramatically changing the amount of information that can be handled on each desk, Reid said. "What now takes three or four seconds to do on the workstation used to take 20 to 30 seconds to do on a mainframe terminal," he added. "That's about a 10 to 1 magnitude of difference."

The quality of the work has also changed, since most of the work was previously done with paper and handheld calculators. The desktop strategy is possible because of the increasing power of desktop workstations and dramatic growth in the amounts of memory available, more than 12M bytes for some machines.

As portfolio managers answer telephone calls from clients, they can view their client's investment history, make calculations on-screen in an electronic spreadsheet and order future stock purchases. The orders will be forwarded to Bernstein traders, who can buy and sell Wall Street stocks and bonds. All screen displays, as well as the portfolio applications, were custom-designed by Bernstein's 20 programmers.

At the heart of this distributed system are two VAX 6410s that store the information downloaded nightly from an IBM mainframe in New Jersey. The IBM 4381 mainframe, owned by Bernstein, but operated and maintained by ADP, Inc., sends consolidated portfolio updates to the two VAXs in Bernstein's Wall Street data center.

Data is transferred from the IBM 4381 to the VAXs through a Systems Network Architecture gateway at a rate of 1.2M byte/sec. and is stored in a 6G-byte disk complex.

"The mainframe's portfolio accounting system draws in the new prices for client assets, based on the prior day's close of business," Bagnoli said. "After the mainframe batch cycle is run, you have an accurate picture of each client's portfolio."

Once inside the VAXs, the portfolio data is housed in a relational database management system built by Sybase, Inc. in Emeryville, Calif. The data is then routed to multiple Ethernet local-area networks located several miles away in midtown Manhattan. Each of these LANs, which support portfolio managers, is anchored by a Microvax.

IS has programmed in certain rules that prevent duplication of key client files. "Business rules, stored in the Sybase DBMS, ensure that the same [naming] conventions will be consistently used in all our applications," Bagnoli said. "We also use Sybase's [built-in] triggers to maintain referential integrity in the RDBMS."

Until the current workstation technology became available, the price of such computer horsepower — available only on a mainframe — was prohibitive. Time, it seems, was on Bernstein's side. Recent price drops in computer memory, coupled with boosts in workstation performance, enabled the desktop-analysis plan. "The network is the thing that makes it all possible," Reid observed. "You can put all of that data out on the net, and it's easy for the users to reach out and get it."

ANDY FREEBERG

Bernstein's Reid *sees computers as a key to new business*

Unix appeases CDC users

BY ELLIS BOOKER
CW STAFF

With interest in its Cyber mainframe line falling flat, Control Data Corp. has joined the crowd of proprietary vendors now counting on other people's technology to stem its flow of red ink. CDC recently shifted its strategy in departmental processing to focus on a line of Unix machines built around reduced instruction set computing technology.

For CDC, which predicts that revenue for its Cyber mainframe line will be flat with last year's, the new line is an effort to answer existing Cyber customers while expanding into some all-important new markets.

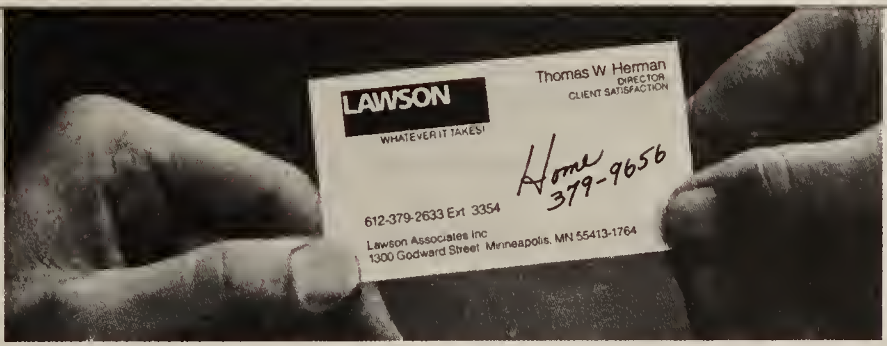
"Lots of customers have been buying departmental computers, and we haven't had an answer there," said President of CDC's Computer Products Group James E. Ousley.

The top-of-the-line processor, the 4680, is said to support 200 to 300 Ethernet-connect end users simultaneously.

Significantly, CDC also promised to provide Unix integration to Cyber customers through a future product for the 4000 series. That element, a high-speed point-to-point link due later this year, will enable Cyber customers to tightly couple the new line to Cyber mainframes running the NOS/VE operating system. The line runs Classix, CDC's version of Unix that is AT&T Unix System V- and Posix-compliant.

The new line is the first fruits of a 6-month-old OEM agree-

Continued on page 29



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DEC, Intergraph bring high-end contenders to workstation market

BY MARYFRAN JOHNSON
CW STAFF

The past few weeks have been a busy time for high-powered technical workstations, with Intergraph Corp. weighing in with a replacement line for its high-end graphics machines and Digital Equipment Corp. bumping up its own performance ladder with four new workstations.

The Huntsville, Ala.-based Intergraph announced its new generation of Unix-based workstations and servers in the Interpro 6000 and Interserve 6000 lines, effectively replacing the 1-year-old IP3000 models with cheaper but higher performance boxes. One of the new workstation's claims to fame is a 27-in. color monitor, which the company said is the largest on the market now.

DEC introduced the Vaxstation 3100 SPX models, available this month, which use a new graphics coprocessor with a high-resolution, 19-in. color monitor. The Maynard, Mass.-based firm said its new models, which run the VMS operating system, will deliver up to 10 times the vector performance of previous Vaxstation 3100s.

DEC's SPX graphics coprocessor will run the X Window System, the base of Decwindows software. The entry-level SPX Model 30 costs $11,439, and upgrades start at $3,500.

Intergraph, which counts itself among the heavy-hitters in the computer-aided design and manufacturing market, also serves as an OEM for DEC.

Although users of Intergraph's IP3000 line will have to buy into a new box — priced from $29,900 to $45,900 — to get the higher-level graphics performance of the 6000 line, all software is binary compatible and can run on any model in either line.

CPUs

CONTINUED FROM PAGE 23

have better production rates. Manufacturers can pack more on a single wafer of silicon because the etching is so small. Also, there is less waste because the process "has to be done so perfectly," said Dick Iverson, president of the American Electronics Association. This could affect the price of computers, but only slightly since "only 10% to 15% of the cost of even the most semiconductor-intensive machines" is in chips, Andrey said.

The next generation of CPUs borrowing from DRAM technology will likely double again in speed, using technology found in the coming generation of 16M-bit memory chips — or 0.5-micron etching. The equipment needed to produce such chips should be available by the end of next year, said Peter Mills, chief administrative officer at Austin, Texas-based Sematech. Some vendors, like HP, already have experimental programs for 0.5-micron CPU etching under way.

Motorola is currently producing small quantities of 0.5-micron custom CPUs for a government contract with TRW, Inc. TRW said that the chips, called CPUAX, can perform 200 million floating-point operations per second. Chips with that technology are not yet commercially available, "but any technology we develop will find its way into product," said Charlie Meyer, the integrated circuits program manager at Motorola.

NEC releases EISA boxes

BY RICHARD PASTORE
CW STAFF

NEC Technologies, Inc. unveiled two multiuser systems based on Extended Industry Standard Architecture (EISA) last week.

Unlike fellow Gang of Nine member Zenith Data Systems [CW, Jan. 22], NEC has chosen to reach beyond the world of the Intel Corp. 80386 chip and build one of the EISA boxes around Intel's I486 microprocessor.

The systems, which run The Santa Cruz Operation's version of Unix, were designed as multiuser computers and local-area network servers, according to NEC.

The Businessmate 486/25E is based on the 486 chip and runs at 25 MHz. The processor incorporates 8K bytes of cache memory, and the 32-bit system comes with 4M bytes of random-access memory.

It can support up to 128 devices, including 64 active users. The machine is slated to ship this quarter and will be priced from $12,995 to $21,995, depending on hard drive capacity.

The Businessmate 386/33E is based on Intel's 80386 chip and runs at 33 MHz. The multiuser machine can support up to 64 devices, including 32 active users. The 32-bit system ships with 4M bytes of RAM.

Scheduled for delivery this quarter, the 386/33E is priced from $9,995 to $18,995, depending on hard drive capacity.

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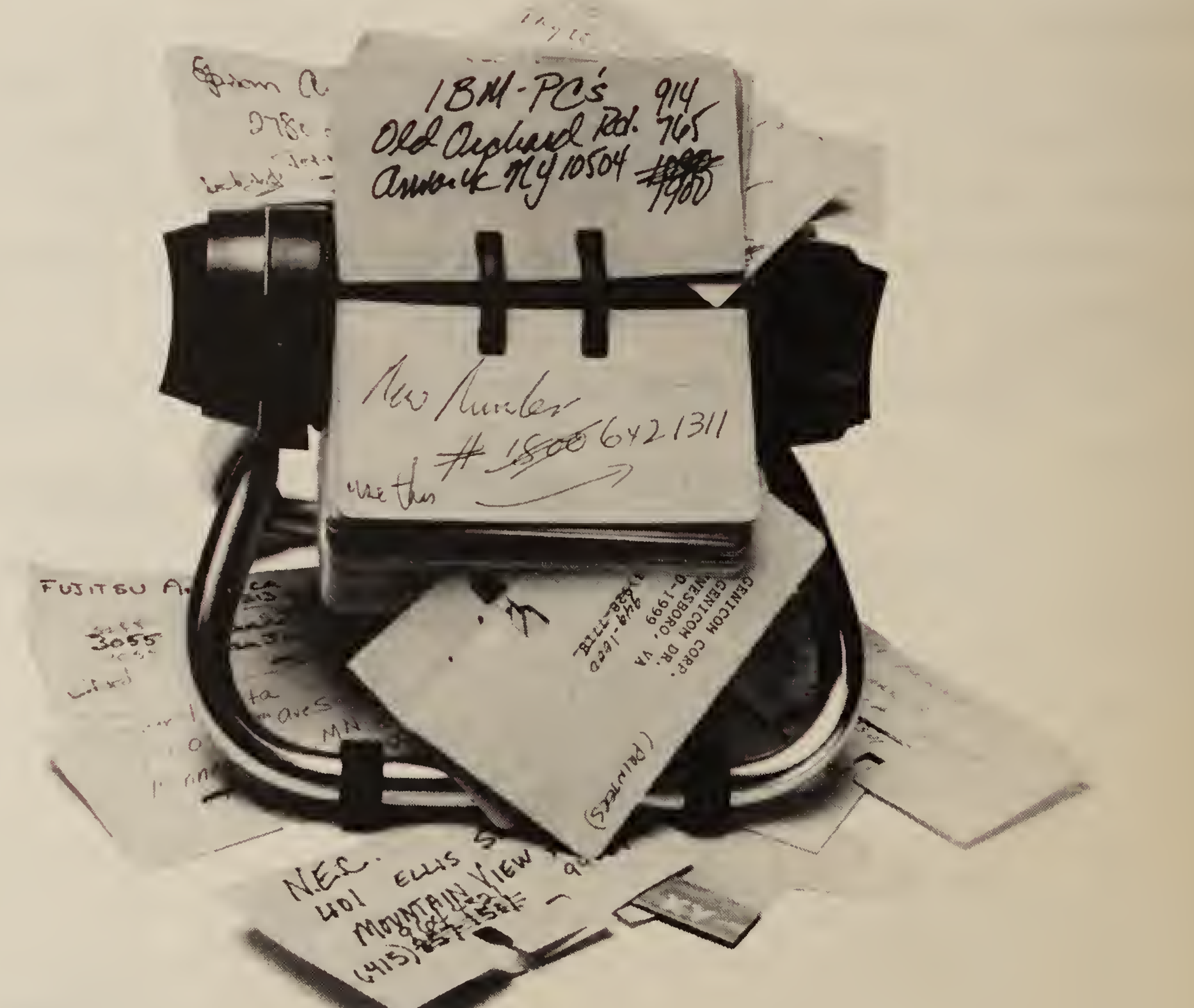

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Cortese

CONTINUED FROM PAGE 23

group of vendors banding together to promote a particular technology typically outweighs the compromises often required.

Perhaps the most dramatic example of a proprietary about-face has been that of IBM. Over the past few years, it has taken an increasingly aggressive stance in using its muscle to influence the evolution of Unix and open-system standards. However, while the company was once able to set de facto standards just by implementing a particular technology, now it is at the forefront of much of the group bonding.

IBM's involvement in the Decorum Group — formed by IBM, Hewlett-Packard and other vendors to promote a distributed computing standard in response to an Open Software Foundation (OSF) effort — is the latest illustration of its new role as a standards leader.

The significance of a distributed computing standard is underscored by the level of participation from major vendors such as IBM. Much of the technology included in Decorum — provided by Transarc and Locus Computing — was funded by IBM. The work of piecing together the various components of Decorum is being done at IBM's Austin, Texas, facility — not coincidentally the home of AIX development. IBM has also indicated that it will incorporate some of this technology into proprietary platforms such as OS/2.

Its involvement with Decorum follows other moves by IBM to shape the outcome of open systems. This past fall, IBM licensed its Common Programming Interface for Communications to X/Open, allowing users and developers to freely use the Systems Application Architecture (SAA) communications interface. In doing so, IBM effectively established a common application programming interface across IBM's proprietary systems and the open systems world.

This move of course was preceded by IBM's role in creating the renegade OSF 16 months ago — an organization that is changing forever the industry and the way vendors do business.

Has IBM turned altruistic? Has it given up on its proprietary systems? Not likely. But the times have changed and with them so has IBM. It realizes it can no longer operate as an island, albeit a large one.

While IBM's SAA scheme and its DB2 database management system are strategic elements of many information systems, IBM is no longer the only game in town. Even the most loyal IBM customers expect some degree of interoperability with the outside world.

IBM is making sure that it provides this connectivity but preferably under its own terms.

Cortese is *Computerworld's* Mid-Atlantic correspondent.

Control Data

CONTINUED FROM PAGE 25

ment between CDC and Mips Computer Systems, Inc. Ousley promised a monthly schedule of announcements that, he said, "will hopefully show the nimbleness of Control Data Computer Products."

Christopher Willard, a senior industry analyst at Dataquest, Inc. in San Jose, Calif., said that the 4000 series would be classed in the technical superminicomputer market.

Willard noted that CDC is just the latest in a group of vendors to use third-party processors. "Perhaps over the next four years, the majority of midrange computers will be run on some industry-standard processor model," he said. When that happens, he added, the situation will be comparable to the workstation market today, where companies differentiate themselves on software, service and minor differences in system configurations.

Value-added promises

CDC's success in the departmental computer segment, Willard said, will depend on how well it sticks to its promised schedule of "value-added" features for the Mips platform.

Bob Kirkman, president of VIM, the Cyber user group, agreed that CDC's success will depend on adding value.

"The major workstation vendors don't have much experience dealing with large data files and mundane batch processes," he said. CDC, by comparison, does have experience with these data center issues.

Kirkman said CDC's Cyber customers fall into two categories: those running CDC's older, proprietary operating systems, NOS and NOS/BE, and those running the NOS/VE virtual environment.

Users of the older systems are ready to upgrade, Kirkman said, and will go to Unix "where the price-performance curve is better, and they can avoid migration issues later."

To keep these customers, which he noted represent about half of the Cyber customer base, CDC had little choice but to provide a Unix option, even if it meant risking an overlap with its Cyber line.

The new, single-processor computers range from the high-end 4680, with a 55 million instructions per second (MIPS) rating, to the 4380, 4360 and 4340, with performance ratings of 18 to 20 equivalent VAX MIPS.

Available in May, the 4680 will be priced at $152,000. The other three models in the line are currently available and priced from $30,000 to $101,000.

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Data General
3400 Computer Drive, Westboro, MA 01580

NEW PRODUCTS — SYSTEMS

Processors

Dynatech Computer Systems has announced its DCS-1 series, a family of supermicrocomputer machines that incorporates the D-NIX operating system, which complies with both AT&T Unix System V Interface Definition and Posix.

A pedestal model includes two Motorola, Inc. 68030 processors, each with 64K bytes of cache, and as many as two Motorola 68882s. A rack model is also available and provides as many as four Motorola 68030 processors and four Motorola 68882s. The machines accommodate 42 and 256 users, respectively.

Pricing starts at $26,820.

Dynatech
P.O. Box 7400
Mountain View, Calif.
94039
(415) 964-7400

Intel Corp. has announced a Multibus I board that combines the company's 20-MHz 80386 processor with a small computer systems interface dedicated peripheral controller.

The ISBC 386/12S board is available in four memory configurations: one, two, four or eight megabytes, with an optional 80387 numeric coprocessor.

Single-quantity list prices start at $4,900 for a 1M-byte version. Additional memory costs $250 per megabyte.

Intel
P.O. Box 58065
3065 Bowers Ave.
Santa Clara, Calif. 95052
(800) 548-4725

Electronic Associates, Inc. has expanded its Simstar line of real-time, hardware-in-the-loop simulation computer systems with the addition of the Model 200 machine.

The system is targeted for use in laboratories and in smaller subsystems of large simulation tasks involving the use of several integrated computer systems.

The product sells for under $100,000. Initial shipments are slated to begin in July 1990.

Electronic Associates
185 Monmouth Pkwy.
W. Long Branch, N.J.
07764
(201) 229-1100

Data storage

Hewlett-Packard Co. has introduced its second rewritable optical-storage product for its HP 9000 workstation platforms.

The HP Series 6300 Model 20GB/A optical-disc library system is capable of storing 20.8G bytes of data on 32 5¼-in. rewritable optical-disc cartridges, the vendor said. Features include a mail slot for inserting and removing cartridges, as well as a small computer systems interface.

A system configured with two rewritable drives and one 650M-byte rewritable optical disc cartridge costs $33,500. A fully loaded, 32-rewritable cartridge system costs $39,950. Individual cartridges are priced at $249 each.

Hewlett-Packard
3000 Hanover St.
Palo Alto, Calif. 94304
(800) 752-0900

Dataproducts Corp.'s ***LZR 650***

I/O devices

Dataproducts Corp. has announced a six page/min. laser printer that reportedly can be used in most multiuser environments.

The LZR 650 laser printer comes standard with Centronics parallel and RS-232C interface connections and 512K bytes of memory.

In addition, the printer contains emulations for Hewlett-Packard Co. Laserjet Series II, Diablo 630, Epson FX and IBM Proprinters or Graphics printers. Optional font cards are also available.

The price for the LZR 650 with a 250-sheet input cassette is listed at $1,695.

Dataproducts
P.O. Box 746
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91365
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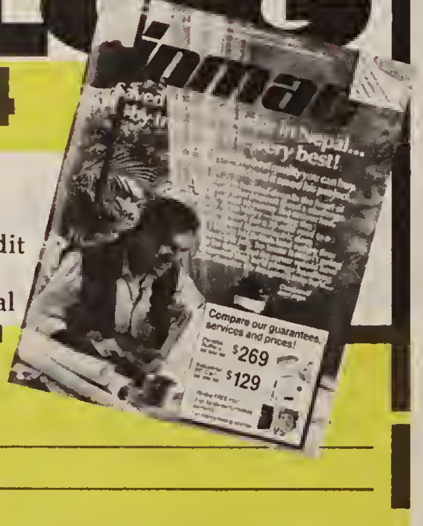

NEW PRODUCTS — SOFTWARE

Database management systems

Optima Software, Inc. has upgraded its IBM DB2 security and administration management systems.

Intended for use as a complement to any data-set security system, Version 2.1 of DB2SAM utilizes RACF, ASC2 and Top Secret User and Group definitions to manage DB2 security.

The software is licensed by site, and pricing starts at $10,000. It supports all releases of DB2, and free evaluations are available.

Optima Software
Suite 109
1765 Challenge Way
Sacramento, Calif. 95815
916-646-3800

Development tools

Computer and Software Enterprises, Inc. has announced a productivity tool aimed at Cobol programmers working with a Hewlett-Packard Co. 3000 computer system.

Quicklib enables programmers to maintain, list and access copy libraries containing source code directly from their editor session. The package is available on a lease basis for $600 per year; a perpetual license may be purchased for $1,500.

Computer and Software Enterprises
11573 Los Osos Valley Road
San Luis Obispo, Calif.
93406
805-544-5821

Applications packages

Andersen Consulting has introduced an integrated, contract-oriented procurement software system developed specifically for manufacturers and contractors servicing the aerospace and defense industries.

Called Procurement/D, the product runs in an IBM mainframe environment and integrates with Andersen's Mac-pac/D Material Resource Planning II software package. The software integrates supplier management, requisition, bid, purchase order and dock-to-dock applications, according to the company.

The package is priced from $205,000 to $400,000, depending on hardware configuration.

Andersen Consulting
69 W. Washington St.
Chicago, Ill. 60602
(800) 541-7512

Productivity Solutions, Inc. has released Version 5.2 of Planner, its project management software for the Digital Equipment Corp. VAX environment.

The enhanced product offers several features such as base lining and project and task annotation facilities.

Designed for use by both technical and nontechnical managers, the program is priced from $2,500 for a low-end workstation to $70,000 for the DEC VAX 9000 mainframe.

Productivity Solutions
138 Technology Drive
Waltham, Mass. 02154
(617) 899-8900

Utilities

Clarion Technology Exchange Corp. has announced an interface designed to provide IBM Application System/400 midrange computer users with a personal computer-style interface.

The Clarion User Interface provides cursor-sensitive Help text via windows, and features include user-customizable action bars and pull-down menus, the company said.

The interface implements IBM's Systems Application Architecture Common User Access guidelines and is priced at $5,000.

Clarion Technology Exchange
P.O. Box 844
Fairfield, Conn. 06430
(800) 222-5011

Raxco Software, Inc. has introduced Version 2.0 of the Rabbit-11 Caching and Virtual Disk System.

The product runs on Digital Equipment Corp. VAX/VMS platforms and now includes a menu interface and automated setup procedures. Caching capabilities include both fixed and automatic caching.

Prices range from $1,995 to $13,492, depending on VAX configuration.

Raxco
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
(301) 258-2620

Software Partners/32, Inc. has released Version 2.2 of Jobsys, the company's distributed job management software system for the Digital Equipment Corp. VAX environment.

The latest release is compatible with VMS 5.0 and later versions and was designed to control the scheduling and reporting of recurring batch jobs, the firm said. Features include full-screen reporting and a menu-driven interface.

Prices start at $2,500 for a single DEC Vaxstation-2000 license.

Software Partners/32
447 Old Boston Road
Topsfield, Mass. 01983
(508) 887-6409

In a perfect world applications from different companies would work together like they came from the same company.

NAS. The pe
for an impe

Digital's Network Application Support (NAS) lets you integrate applications and share information across your multivendor environment.

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NAS. How it works.

Using a typical example, we'd like to show you one of the many ways NAS can be used in your real-world environment.

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NAS. Why it works.

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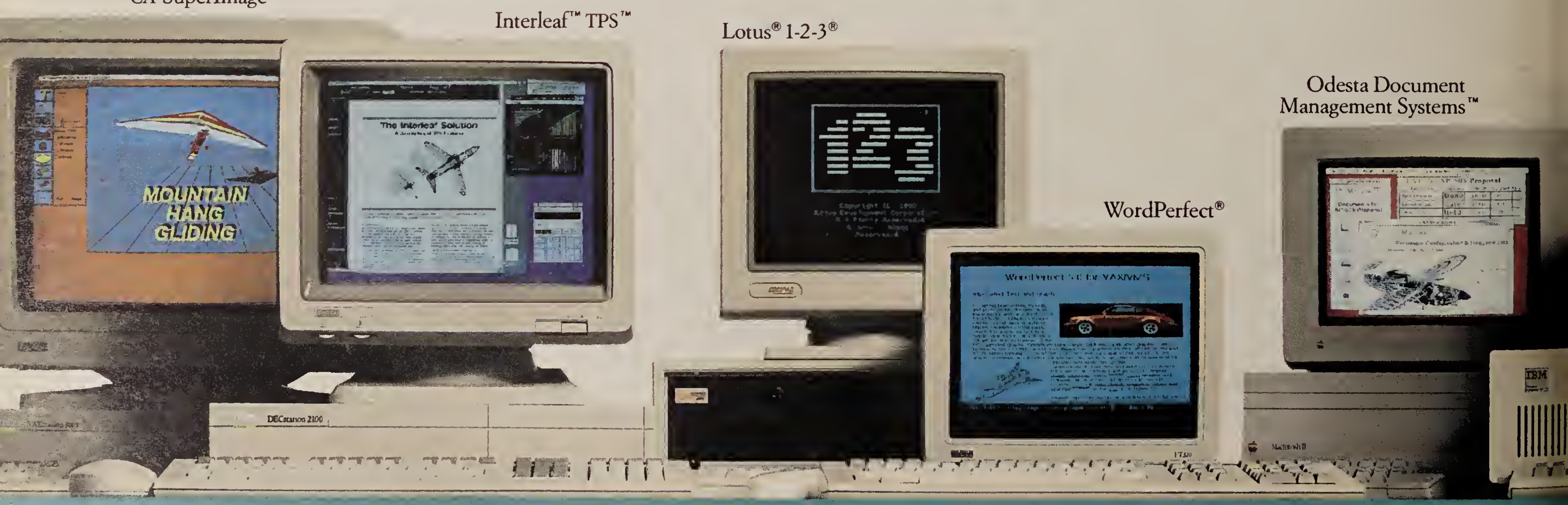

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For users, NAS means you can continue to use the applications you're most comfortable with, but also be able to share information with others much more easily.

For the whole company, NAS means that with more computers working together, more people are working together. That, of course, means more productive workers and the ability to compete more effectively.

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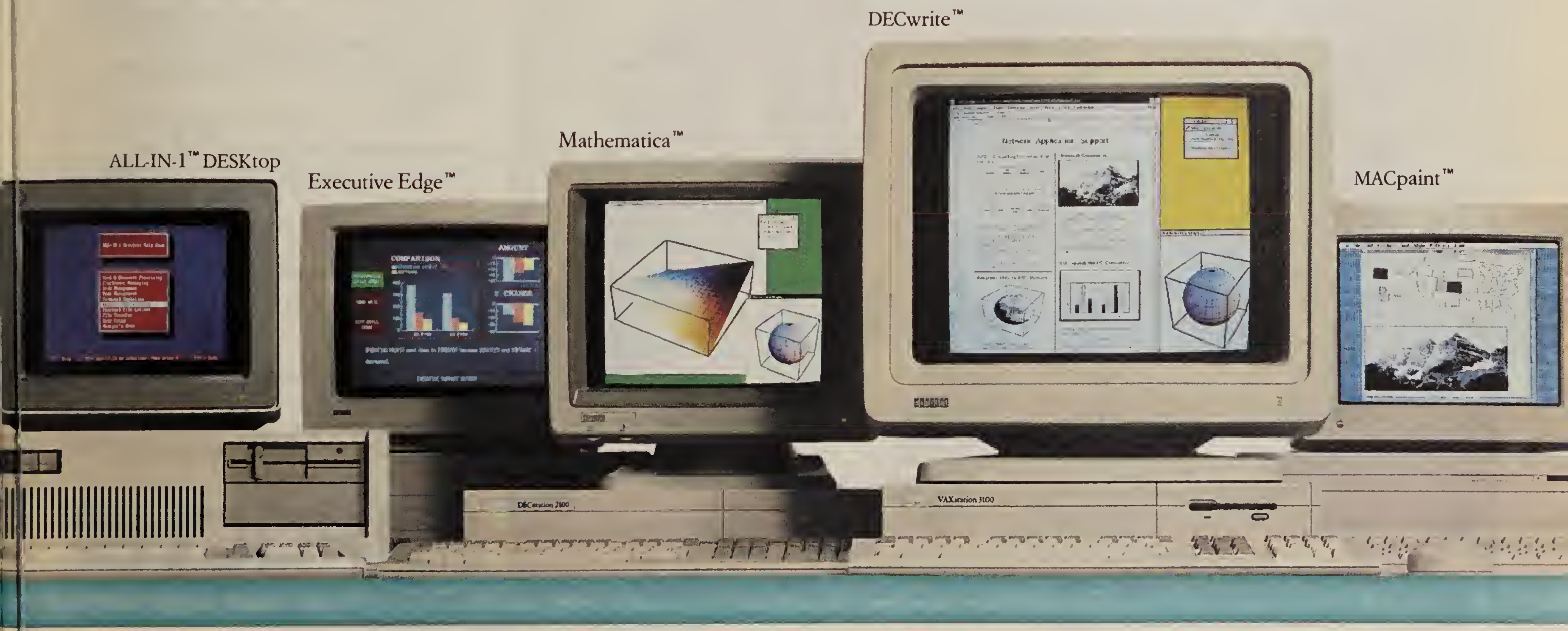
now.



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MICRO BITS

Patricia Keefe

How about OS/2-ing it?

Ain't it the truth. Think ads for IBM's Personal System/2s are silly? Check out the following observation, the source of which I no longer remember. "Look at those IBM ads about 'PS/2-ing it.' It's not the box; it's the operating system [that solves the problem]. They should be 'OS/2-ing it,' but they've missed the boat — that's the story!"

The art of the deal. Much to Businessland's chagrin, pending layoffs and negative earnings were attributed in part to lost Compaq sales. Compaq is a good bread-and-butter brand, and it is hard to make up the difference, says Bruce Stephens, an analyst at International Data Corp. "It's sort of like Donald Trump selling Resorts International to Merv Griffin, who thought he got a really good deal," Stephens says. In the end, though, it was Trump who came out looking smart, he adds.

I'll drink to that. The proletarian masses aren't the only ones embracing *glasnost* and *perestroika* with a vengence. Every week, some computer

Continued on page 38

Unix charges into desktop gap

ANALYSIS

BY CHARLES VON SIMSON
CW STAFF

Like any gambler who has been around for a while, the players in the desktop Unix game have made the most of their hand. Often short of aces of their own, they are capitalizing on the troubles of IBM and Microsoft Corp. in an effort to share the desktop pot with OS/2.

"For the moment, OS/2 has been trumped," said Brian Boyle, an analyst at Berkeley, Calif.-based market research firm Novon Research, "and the trump, through no wisdom of AT&T's, has been Unix."

Indeed, uncertainty about OS/2's role as a viable platform for the 1990s has given Unix a great deal of momentum as a stable, tested alternative. OS/2's gluttonous appetite for PC random-access memory does not compare favorably with Unix, which can run comfortably within the 2M-byte limit that OS/2 has yet to crack.

Tested by fire

IS managers report that they consider Unix an economical, open PC solution, available for hardware platforms that are cost-effective today. "Most of our new PC applications will be on Unix," said Jeff O'Neil, director of advanced systems at Arco Oil & Gas Co. in Plano, Texas. "At this point, OS/2's role is not clear, and Unix has been through the fire."

"We will really move in force into Unix when we see applications with a Windows-like graphical interface," O'Neil said. "But even pending that, today we have maybe one person out of 500 on OS/2."

Most early PC Unix adapters such as Arco have a tradition of using the operating system on other corporate platforms.

Even where there has been large-scale experience with Unix, however, there is often little understanding of it as a PC alternative.

Bellsouth Corp. recently standardized on Unix for customer service representative applications. "We did a competitive analysis against OS/2, and there was a general ignorance that you could do Unix on a PC," said Alex Castlejohn, operations manager in the IS division at Bellsouth.

"People thought that OS/2 was ready and in full glory, while Unix was out in the future," Castlejohn said. "In fact, the exact opposite is the truth."

According to market numbers from International Data Corp., Unix accounted for about 2.9% of total PC operating system shipments in 1989, vs. 0.8% for OS/2. "In fact, Unix's lead is wider than that; it has the momentum in growth," said Nancy McSharry, PC software analyst at IDC.

But there is heated debate on just how competitive the two operating systems are. "For the near term, Unix vs. OS/2 is a horse race," said Marshall Mosely, OS/2 analyst at Dataquest, Inc. and self-proclaimed evangelist for the operating system. "But by the mid 1990s, OS/2 will have a clear lead."

PC Unix leaders are losing their patience with that type of assessment. "I don't see what the forecasts of OS/2 dominance are based on," said Allen Ginsberg, director of strategic marketing at The Santa Cruz Operation. "Unix is a tested tech-

Continued on page 38

Borland boasting of 1-2-3 defectors

BY CHARLES VON SIMSON
CW STAFF

SCOTTS VALLEY, Calif. — Four months of efforts to swing users of Lotus Development Corp.'s 1-2-3 to Borland International, Inc.'s heavily discounted Quattro Pro spreadsheet are showing results, at least as measured by Borland's own numbers. Borland said earlier this month that Quattro Pro sales drove the company's revenue to record highs for the third quarter, ended Dec. 31.

Borland spokesman Dick O'Donnell said that of the 100,000 copies of Quattro Pro sold since the product began shipping in September, 80,000 were direct sales to end users. The vast majority of those were $99 versions of the product sold to Lotus customers, O'Donnell said, declining to comment on specific numbers. Borland has offered the same version of the product that sells for $495 in the retail channel for $99 to verified Lotus customers.

Borland's revenue rose 20% over the second quarter to $30.2 million from $25.2 million. The figure was a 28% increase over the similar period a year ago. Revenue for the nine-month fiscal period was $78.4 million compared with a net loss of $4.9 million a year ago.

The spreadsheet product has made strong inroads against market-share leader 1-2-3 based on its simplicity and heavy discounting, according to analysts. "Quattro Pro is idiot-proof," said Nancy McSharry, personal computer software analyst at International Data Corp. in Framingham, Mass. IDC has not yet assembled market-share data for the quarter, but McSharry found the claim of sales to Lotus customers "likely."

Inside

- Why Lotus went with Sun. Page 37.
- It hasn't been all sweetness and light with Godiva's laptop experience. Page 37.
- Tandy announces 8088-based PC. Page 39.

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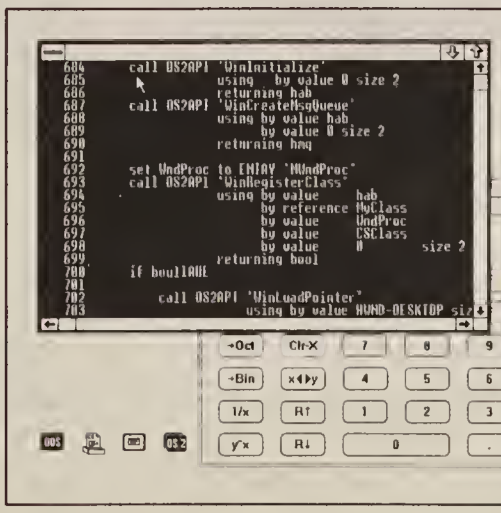

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        call OS2API 'WinInitialize'
                    using   by value 0 size 2
                    returning hab
        call OS2API 'WinCreateMsgQueue'
                    using by value hab
                          by value 0 size 2
                    returning hmq

        set WndProc to ENTRY 'MWndProc'
        call OS2API 'WinRegisterClass'
                    using by value      hab
                          by reference MyClass
                          by value      WndProc
                          by value      CSClass
                          by value      0         size 2
                    returning bool
        if boolTRUE

           call OS2API 'WinLoadPointer'
                       using by value HWND-DESKTOP siz
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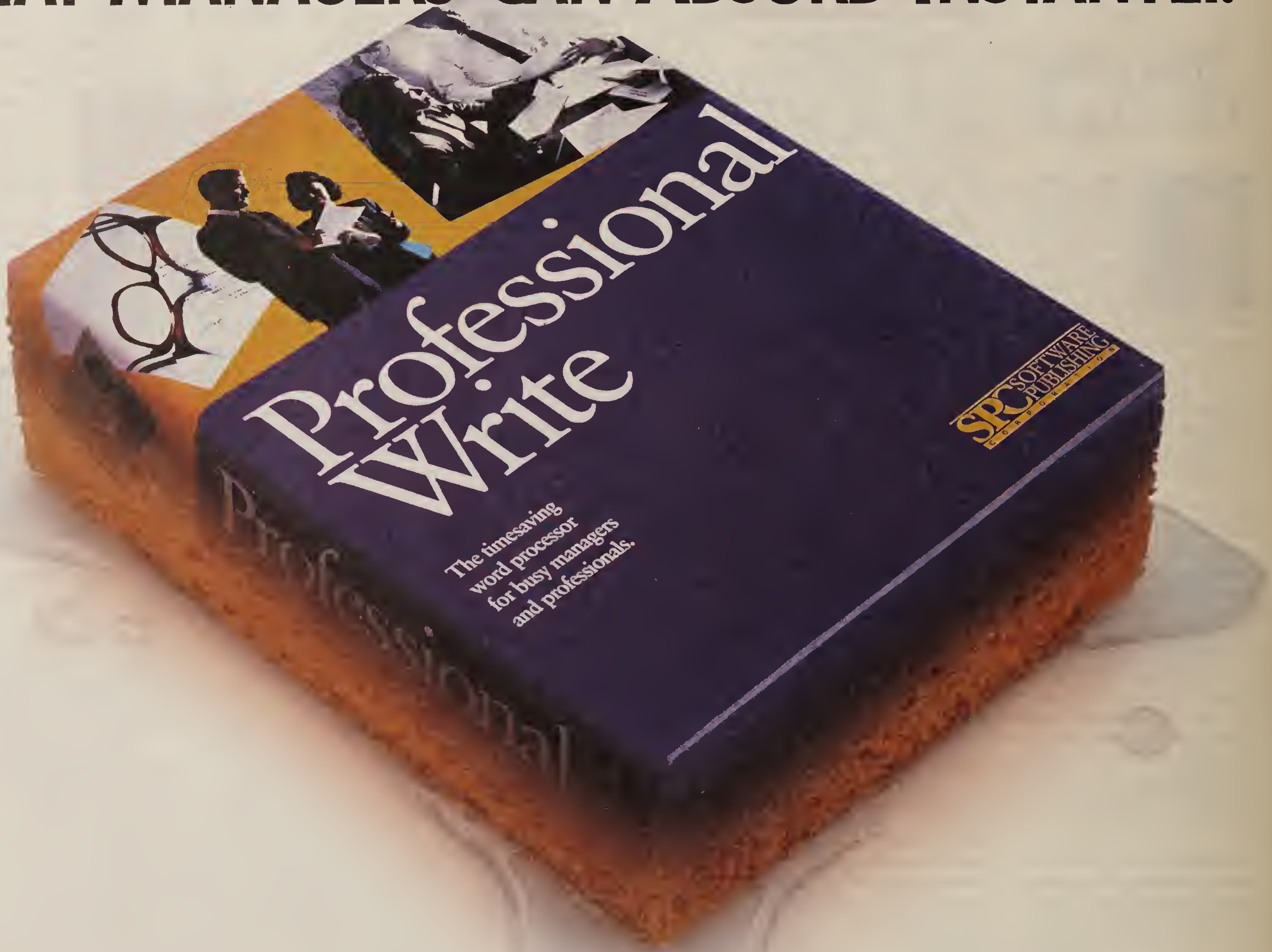
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Lotus bets on Sun's potential

Pulls 1-2-3 away from the more popular alternative of Microsoft Xenix

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — The recent unveiling of versions of Lotus Development Corp's 1-2-3 for Sun Microsystems, Inc.'s Unix platforms begs a few questions, such as *why* Sun hardware and why *not* Microsoft Corp.'s Xenix, which is the most widely installed form of Unix on the desktop today?

The answers mostly revolve around current installed base numbers on the one hand and the potential for growth on the other, said Lotus and analysts.

For example, analysts said installed base is the reason Lotus went with Sun over workstation rival Digital Equipment Corp. "From Lotus' viewpoint, Sun is more important because they are the No. 1 workstation provider in industry," said John Dunkle, a consultant and president of Workgroup Technologies.

Sun President Scott McNealy "is not going to kiss and hug and make up to Lotus, and [then] play second fiddle to DEC," Dunkle added.

"It's obvious where we stand," Lotus President Jim Manzi said. "We absolutely made the right choice."

Nancy McSharry, an analyst at International Data Corp. in Framingham, Mass., had a more cynical view: "Lotus went with Sun first because Sun sent six developers over to Lotus to help push [1-2-3 for Sun] out the door." Sun knows it needs strong productivity desktop software, she said. Adding to Sun's arsenal, Ashton-Tate Corp. announced last week that Dbase IV will also run on the Sun platform.

However, McSharry acknowledged that Lotus needs to expand its market focus. The spreadsheet monolith has heavily saturated the DOS market, achieving at least a 60% market share. Even if it could expand that slice of the pie, 1-2-3 is under increasing attack in this segment from the likes of Borland International's discounted Quattro Pro (see story page 35) and Microsoft's graphical Excel.

Furthermore, "OS/2 isn't going anywhere in a hurry, and their Mac project is still under development [see story this page]," McSharry said. As such, Lotus has to move up and off the personal computer.

Rick Sherlund, an analyst at Goldman Sachs & Co., compared the Lotus foray onto the Sun desktop with Microsoft's early support for the then-embryonic Apple Computer Inc. Macintosh market. "The initial sales of the Macintosh did not warrant a big upfront R&D effort, but [eventually] the market grew nicely," Sherlund said. He estimated Microsoft's lion's share of Macintosh software rakes in about $100 million annually.

Lotus is getting 1-2-3 for Sun off on the right foot by tailoring its pricing to MS-DOS programs. This strategy is seen as a good way to seed a new base of users for Lotus and reflects both Sun's competition — PCs — and the fact that 1-2-3 for Sun will be available through dealers.

Getting the worm

Given the size of Sun's installed base and current manufacturing rate, initial Lotus revenue will be limited. However, that is not the point: It is still a significant position for them to grab early, analysts said, especially if Sun leads the charge into reduced instruction set computing (RISC) design.

"RISC will be the most important chip technology in the '90s," said Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in San Jose, Calif.

Which is not to say that Lotus does not value the DEC market, because it does. Lotus and DEC are building 1-2-3 for VMS, which is supposed to ship in the first half of this year and will be distributed by DEC.

Using Lotus' Datalens driver technology, 1-2-3 users will be able to integrate data through VAX/SQL Services from native VAX RDB/VMS and other relational databases into their spreadsheets, Lotus claimed. Datalens provides access to external data from directly within Lotus applications.

DEC is charged with bulking up 1-2-3 with support for other DEC services, such as All-In-1 integration. Users will be able to mail Lotus spreadsheets to other VAX mail users. They will also be able to integrate information into 1-2-3 from other DEC-supported spreadsheets such as Access Technology, Inc.'s 20/20 and Ashton-Tate's Dbase.

Analysts agreed that, given what some say is DEC's lack of control over workstation hardware, 1-2-3 for VMS will provide users invested in DEC systems with a level of integration with workstations.

On the flip side, Lotus was not thinking installed base when it settled on Sun's Unix software, according to Lotus Vice-President Frank Moss. He said Lotus is aware of the success of The Santa Cruz Operation's Xenix, adding, "We'll look at it, but we're not announcing anything." Focus is key, he said: "Everyone comes to us with deals, but we're not in the port-of-the-month business."

It's coming

Put up or shut up. That's one way of quieting doomsayers who say Lotus' 1-2-3 for the Mac is off track and off schedule.

Anxious to quell persistent reports that its Mac project is a long way from the end of the development tunnel, Lotus will schedule the first public demonstrations of the project shortly, according to Frank Ingari, vice-president of the Personal Software Development Group.

Ingari explained that the software was first announced in 1987, but Lotus really could not get going on the project until Release 3.0, on which it is based, was finished. Work in earnest began only about six months ago, with the primary focus on getting the Mac interface down pat.

In response to published reports that 1-2-3 for the Mac is late and may not ship until 1991, Frank Moss, vice-president of Lotus' Networked Applications and Systems Division, insisted there never was a ship date.

Moss and Ingari did confirm a recent change in project leadership. The way Ingari explained it, Lotus replaced a "brilliant" marketing person who pulled together a "top-notch" development team with a development specialist.

PATRICIA KEEFE

Laptops leave sour taste in sweets maker's mouth

BY RICHARD PASTORE
CW STAFF

NEW YORK — Since it outfitted its field sales force with laptop computers two years ago, Godiva Chocolatier, Inc. has tasted the sweet rewards of timeliness and productivity. But the $100 million leader in the premium confection business is somewhat soured on the machines' reliability record.

Godiva's goal was to give its field personnel "a tool to help them make better presentations, supply more information and be more helpful to the customer," MIS director Robert Arakelian said. "We weren't looking for a hard-dollar payback."

The 22 field representatives currently use their Grid Systems, Inc. Gridlite Plus laptops to enter and transmit customer orders, download reports and electronic mail from the main office and provide customers with instant order-fulfillment data.

"The E-mail gave us the biggest time savings," Arakelian said. Normally, office staff are forced into a frustrating game of phone tag with the continually mobile field representatives, but E-mail put an end to that. The Grid machines and a dedicated IBM Personal System/2 Model 50 at headquarters run AT&T's Access Plus E-mail software.

The laptops also have cut the time required to submit certain complex multistore orders from as much as two hours to a matter of minutes. Formerly, a sales representative would call the order-fulfillment office and recite the complex order verbally. "They'd sit there for an hour saying 'Store No. 1, Product No. 1, 10 cases; Store No. 2, Product No. 1, 20 cases,' " Arakelian said.

Using the laptop, the representative keys the order into a Lotus Development Corp. Symphony spreadsheet and transmits it to the order processing office via an internal 2,400 bit/sec. modem and previously existing dial-up lines.

In return, the representative and the customer receive order numbers and an advisory of any problems that may affect the order's fulfillment — all on-site via the laptop. Later, the representative will attach the unit to a printer and generate a hard-copy record for the customer.

The time saved on order input translates directly into more time to call on customers, Arakelian said.

No quick fix

Though Godiva is pleased with these improvements, it is a little bitter over the Grid units' repair record. There have been eight malfunctions in less than two years, including failed disk drives, battery packs and screen chips, said Don Gould, a senior programmer/analyst.

"I consider that a pretty high incident rate, and we're not happy about it," said Gould, noting that most of the trouble was not attributable to user-induced damage.

Though Gould called Grid's repair service excellent, "the problem is that we've had to use their service so much," he said. The repair record is one reason Godiva is now giving Compaq Computer Corp.'s LTE a trial run, he noted.

Godiva recently bought two LTE laptops at prices comparable to the Grid units, and Arakelian is decidedly sweet on them.

Grid's reliability *grates on chocolatier's sensibilities*

"The LTE is just one super machine. It's a lot lighter, and the functionality is exactly the same" as the Grid, he said. "I think that all the new [purchases] will be LTEs."

There will be changes at the other end of the system as well. Currently, at Godiva's Reading, Pa., order-processing office, the PS/2 sits waiting to receive and transmit orders via the AT&T E-mail software that resides on the machine.

Because there is no direct connection, orders received by the PS/2 must be rekeyed manually into the company's IBM Application System/400, which runs the order and manufacturing system. "We haven't bridged the PS/2 into the AS/400 because we've just implemented a new [manufacturing resource planning] manufacturing system," Arakelian said.

However, the plan is to port the AT&T E-mail system to the AS/400 in the next fiscal year and eliminate the manual go-between and the PS/2's role as a server, Gould said. He said he expects AT&T to do the bridging. Once this migration is completed, Godiva will implement its newest application — an AS/400-based customer database system developed in-house.

When field representatives want customer data — order history, outstanding invoices and so on — "all they will have to do is dial in to let us know how much data they want, and we'll download it to them straight from the AS/400," Arakelian said.

Keefe

CONTINUED FROM PAGE 35

firm hatches plans to grab a chunk of the golden market glistening behind the now open Iron Curtain. Just what do these vendors expect to receive in return from the hard currency-poor Eastern Bloc? Remember, the Soviets paid Pepsi with Stolichnaya vodka. (Although if you've ever tasted what passes for Pepsi in the Soviet Union, you know who got the better end of that deal.)

Ball of confusion. The clouds obscuring IBM and Microsoft's bid to establish Microsoft's OS/2 LAN Manager as a file server standard go beyond efforts to align their respective server offerings. A user at a large New York bank notes that Microsoft and IBM each have a product named LAN Manager, only IBM's is a *network management* server. "It's confusing even to me, and I'm an experienced guy in the systems area." Until the two get better coordinated, the user said his compatriots will remain leery of exploring leading-edge technology in an arena where they are trying to use the local-area network as a real productivity tool.

The Glimmer Twins. On the subject of LAN Manager, it seems that the key area of difference revolves around IBM-specific application programming interfaces (API). IBM has already adopted most of Microsoft's APIs, and users can expect identical interfaces and installation procedures. Mike Murray, who heads up Microsoft's Networking Business Unit, characterized the remaining work as "the difference between being fraternal and identical twins."

Tourniquet time. The hemorrhaging of staff keeps on at Ashton-Tate, while former officials continue to pop up on the payrolls of competitors. Eric Kim, who was until last week vice-president of Asthon-Tate's Database Division (now overseen by Ashton-Tate President Ed Esber), has joined Lotus as general manager of OS/2 database development.

SQL Server product manager Pamela Goldschmidt has left Ashton-Tate to join Microsoft. And one-time Ashton-Tate President Luther Nussbaum turned up last week at the helm of Evernet, a new venture targeting nationwide service and support for local-area networks. On the plus side, the latest version of Dbase is said to be close to shipping.

Remote Control. Sun President Scott McNealy recently explained his interest in Lotus 1-2-3 by saying, "Xerox is to copiers as Lotus is to software." After his microphone faded twice in the midst of his remarks, he quickly quipped, "I must be saying something wrong, I think Jim [Manzi, Lotus' president] is censoring me."

Keefe is *Computerworld's* senior editor, PCs and workstations.

OS/2 falter

CONTINUED FROM PAGE 35

nology gaining momentum; it's more realistic to say the two will split the market."

Unix, including Microsoft's popular Xenix flavor, will have to overcome two fundamental barriers if it is to become the DOS of the 1990s, and both of those barriers are ready to crumble.

The first is a graphical user interface that is as easy to use as the Apple Computer, Inc. Macintosh or Microsoft Windows. The Unix world has found two: Next Computer, Inc. Nextstep and Open Desktop from The Santa Cruz Operation.

The second barrier has been the lack of the cornerstone applications that sell systems. Now those packages are flooding through the gates of nearly all vendors. Lotus Development Corp.'s recent release of Lotus 1-2-3 for Unix is an important bellwether. But Wordperfect Corp.'s Wordperfect, Microsoft Word and other applications are already out and showing strong early demand.

What opened the floodgates, however, is largely a function of OS/2's stumbles. "If they had made OS/2 DOS 4.0, it might have worked," Novon's Boyle said. "As soon as people are forced to look, they see that the alternative on a 386 platform is Unix."

Better DOS than DOS

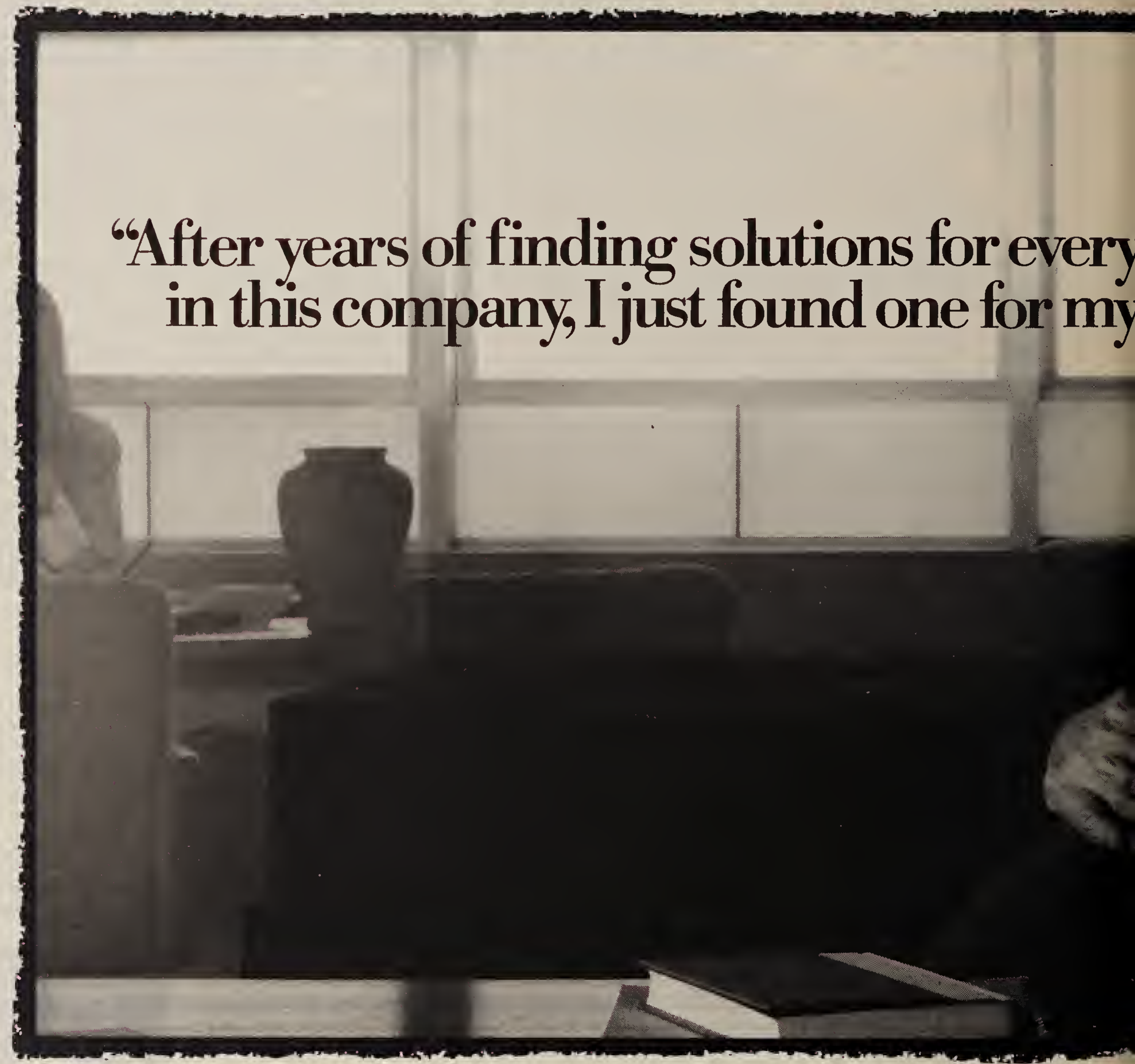
Microsoft maintains, however that the 32-bit version of OS/2 due later this year will be a better DOS than DOS and will begin to hobble Unix's strong desktop gait.

"Version 2.0 [of OS/2 Presentation Manager] is enabling technology that is going to offer far more than Xenix can," said Ross Chapman, a Microsoft OS/2 product manager, "but Unix is getting better, and if Version 2.0 doesn't work, we're dead."

Maybe not quite dead. While the firms' tangled relationship is based on the success of OS/2, each is hedging its bets.

The most obvious twist is that Microsoft is the developer and licenser of Xenix. Microsoft granted exclusive rights to the system to The Santa Cruz Operation (SCO) to distance itself somewhat from Unix but controls the relationship through an equity position in SCO.

The plot will only thicken. IBM is expected to introduce its RT workstation next month and has a development relationship with Next, Inc.'s Steve Jobs to use his Mach Unix-based Nextstep interface and development tool kits. Observers note that the combination of the relationships cannot help but give Unix a boost.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NEW PRODUCTS

Systems

Tatung Company of America, Inc. has announced a Sparcstation 1-compatible system, which is the result of a licensing agreement with Sun Microsystems, Inc.

Called the VAR-station I, the unit incorporates a Sun Scalable Processor Architecture (Sparc)-based microprocessor, Sun's SunOS operating system and Sparc optimized C and Fortran compilers.

Deliveries are scheduled for the third quarter of 1990, and the systems will be offered for a suggested retail price of $7,000.

Tatung
2850 El Presidio St.
Long Beach, Calif. 90810
213-637-2105

Tandy Corp. has introduced an Intel Corp. 8086-based personal computer for small businesses and home office users.

The Tandy 1000 SL/2 offers 512K bytes of internal memory and one industry-standard 3½-in., 720K-byte floppy disk drive. Both the MS-DOS 3.3 operating system and Tandy's Deskmate graphical user interface software are built into read-only memory. The unit carries a suggested catalog price of $999.

Tandy
1700 One Tandy Center
Fort Worth, Texas 76102
817-390-3487

Board-level devices

Altos Computer Systems has announced an Intel Corp. 80486-based upgrade board created for users of the Altos Series 1000 Model 25 and Model 33 computers.

The field-installable 486 Upgrade Kit is a single-board replacement that runs at 25 MHz. The board runs in conjunction with the Altos System V Unix-based operating software and comes standard with 4M bytes of main memory, expandable to 28M bytes.

It retails for about less than $10,000.

Altos
2641 Orchard Pkwy.
San Jose, Calif. 95135
408-946-6700

Hauppauge Computer Works, Inc. has announced a motherboard for Intel Corp. 80386-based systems that are IBM Personal Computer or AT compatible.

The Hauppauge 386 Motherboard AT20/4 was reportedly designed as a complete system board for new Intel 80386-based systems or as an upgrade to existing systems. The 20-MHz board is said to feature 4M bytes of 80-nsec. random-access memory, a 32-bit slot for up to 64M bytes of RAM, a socket for an Intel 80387-20 math coprocessor, eight I/O slots ranging from 8-bit to 32-bit configurations and mounting holes for IBM Personel Computer AT-style systems.

The price is $2,995.

Hauppauge Computer Works
175 Commerce Drive
Hauppauge, N.Y. 11788
516-434-1600

Software applications packages

AGFA Compugraphic, a division of AGFA Corp., has announced two software packages for use with its Integrator professional composition system.

Integrator Graphiti allows the user to convert graphics created with an IBM Personal Computer, Apple Computer, Inc. Macintosh or Sun Microsystems, Inc. workstation into Integrator Draw and Paint files. Version 3.0 of Powerpro permits Integrator users to create, edit and output rounded corner boxes with individually defined rule weights for the four sides and radii, the company said.

Upgrade pricing for current users ranges from $895 to $4,680, depending on customer's existing configuration.

AGFA
200 Ballardvale St.
Wilmington, Mass. 01887
508-658-5600

Dataease International, Inc. has upgraded its relational database management software.

The Dataease package retains its DOS extender technology, and Version 4.2 reportedly addresses as much as 16M bytes of random-access memory on Intel Corp. 80286- and 80386-based machines. The product is also capable of running in conventional 640K-byte memory on Intel 8088, 80286 and 80386 platforms. It is priced at $750.

Dataease International
7 Cambridge Drive
Trumbull, Conn. 06611
203-374-3374

A multiple-language software program that translates words and phrases from one language to another has been announced by Microlytics, Inc.

Called Multitrans, the package is available in six languages: English, French, German, Spanish, Italian and Dutch. Versions with Kanji and Katkana for the Japanese market are scheduled for release this year.

Each package offers a central core of 30,000 word entries and is priced at $495.

Microlytics
2 Tobey Village Office Park
Pittsford, N.Y. 14534
716-248-9150

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So before you bet your business, look closely at the benefits and functionality of our product versus the others.

You'll learn that for empty promises and misleading tech-talk there are plenty of software companies you can call. But for a more intelligent alternative, there's only one.

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INTRO
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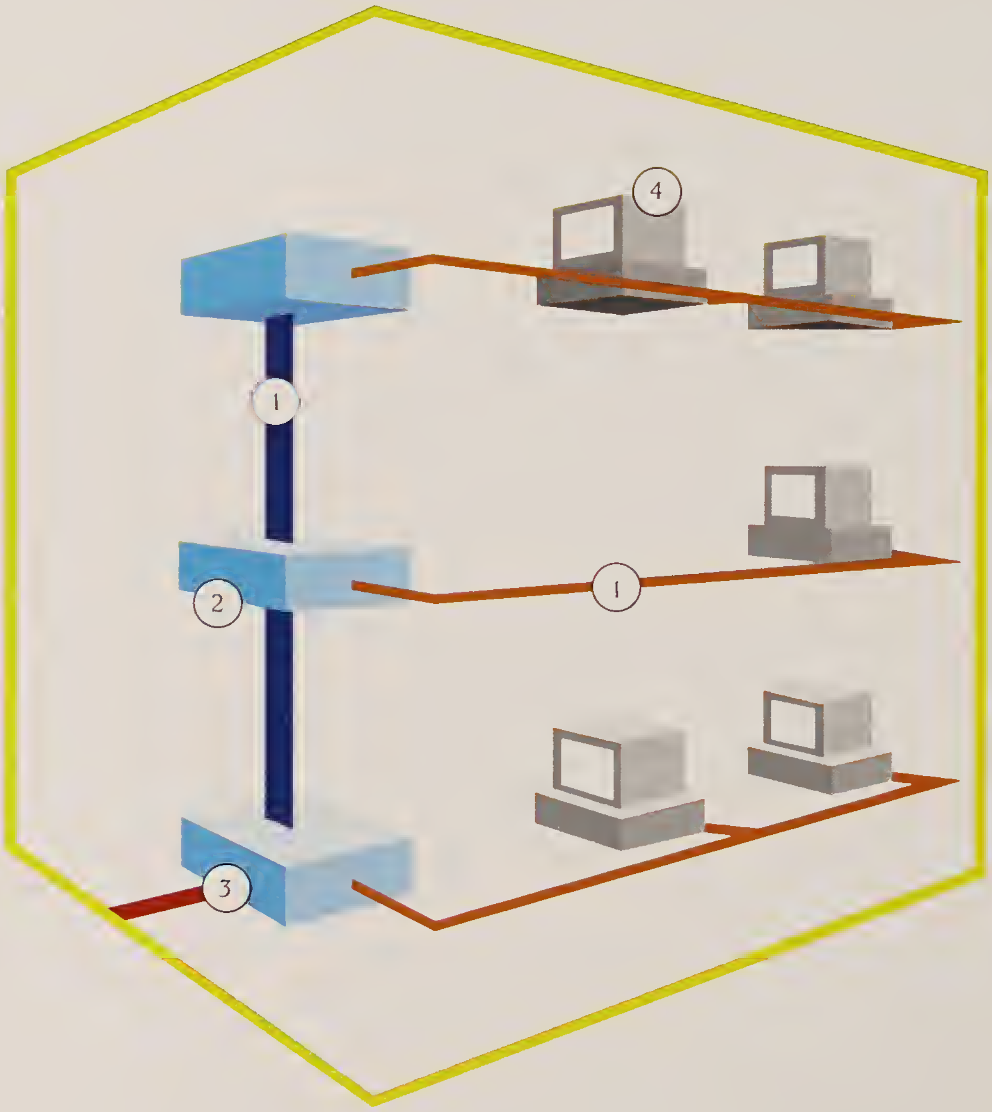

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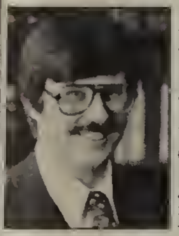
DATA STREAM

Jeffrey N. Fritz

Recognizing ISDN’s faults



Due to its digital nature, Integrated Services Digital Network can provide far greater reliability than analog nes. It is well known that analog nes are a touchy form of comunications that are subject to igh error rates. However, for SDN to live up to its reputation, must be free of link failures, nd that means equipment venors must consider fault tolernce.

The problem is that ISDN, ke most switched data commuications networks, relies on a omplex digital switch that is ggling thousands of tasks ery second. Although rare, it is ossible for the switch to slip nd cause an error. A far more ommon problem stems from he fact that ISDN, like most elephone service, relies on

Continued on page 44

Inside

- Split-second response time promised by new PC package. Page 44.
- Chipcom launches Online family. Page 44.
- Niche grows for document management. Page 45.

OSI: Jumping in with one foot

U. Cal. offers itself as test bed for OSI, but TCP/IP should survive

ON SITE

BY ELISABETH HORWITT
CW STAFF

SAN DIEGO — Hoping to speed the day when Open Systems Interconnect (OSI) supports true multivendor interoperability, the University of California has initiated a joint project with Digital Equipment Corp. to create a pilot OSI network on campus, as well as to form OSI-based links with the European Academic and Research Network.

The university is planning several roles for its OSI network, spokesmen said. First, it will enable the institution’s own IS and communications staff to “gain some practical OSI experience, find out to what extent things really do and don’t interoperate, and where the problems are,” said Clifford Lynch, the university’s director of library automation.

Second, the university is offering the network as a test bed for vendors that want to ensure that their OSI-based products interoperate, said Claudia Jordan, the university’s manager of data communications. This will be a boon to the academic and research communities that the university is a part of, which are “still using [Transmission Control Protocol/Internet Protocol] but going toward OSI, waiting for products to come out and be proven so they will be worth the time and money,” she added.

The joint project with DEC has two pieces. One will be a “basic packet-shuffling network being built out of Decrouter 2000s — that’s all coming from DEC — and which will also provide the link to Europe,” Lynch said.

Once this is in place, the university plans to use OSI to interconnect “a whole carnival of machines you find in a place like UC,” including VMS and Ultrix systems running off-the-shelf Decnet Phase V, systems running the University of California at Berkeley’s Unix 4.4 and other vendors’ equipment, he added.

Continued on page 44

Sears’ EDI service: The check is in the E-mail

BY MITCH BETTS
CW STAFF

SCHAUMBURG, Ill. — Sears Communications Co., which provides electronic data interchange (EDI) services over its value-added network, recently expanded its commercial services to include electronic funds transfer (EFT) to help companies automate their corporate payments to suppliers.

“EDI eliminates paperwork and reduces labor. To turn around and then send a check seems to defeat the whole purpose,” said Sara Coffou, EFT product manager for the company, which is part of Sears Technology Services, Inc., the corporate information technology unit of Sears, Roebuck and Co.

The first user of the service is the Sears Merchandise Group, which will conduct a pilot test with a group of trading partners beginning this month. Outside customers are also being sought for pilot programs, Coffou said.

For the payers, electronic payments have the advantage of reducing the staff and supplies needed for writing checks, according to Coffou. For the suppliers, electronic payments promise the end of lost checks, efficient reconciliation with accounts-receivable records and improved cash management, she added.

In a typical transaction between Sears Merchandise Group and a supplier, electronic payment service requires several steps:

- Sears creates and sends payment instructions and remittance detail through the network to its originating bank.
- The bank accepts the data, separates the payment instruction and remittance detail for transmission to separate institutions and translates each to the appropriate format.
- The bank immediately transmits the remittance detail to the supplier using the Sears data network and stores the payment information until it is due for settlement.
- Later, payment is sent to the supplier’s bank through the automated clearinghouse for electronic payments.
- If the customer chooses, the remittance detail may be sent through the automated clearinghouse together with the payment instruction.

Sears Communications said it has formed alliances with an initial group of eight major U.S. banks to provide the electronic payments service, which it calls Sears Financial EDI Services. The service supports a variety of data formats as needed by customers, their banks and suppliers, the vendor said.

The eight financial institutions are: Bankamerica Corp. in San Francisco; Corestates Financial Corp. and Midlantic Corp.’s Continental Bank, both in Philadelphia; First Wachovia Corp. in Winston-Salem, N.C.; Harris Bankcorp, Inc. and Northern Trust Corp., both in Chicago; Mellon Bank NA in Pittsburgh; and National Bank of Detroit.

Many banks are entering the field of EDI in order to retain their traditional role as intermediaries in corporate financial transactions [CW, Aug. 10, 1987].

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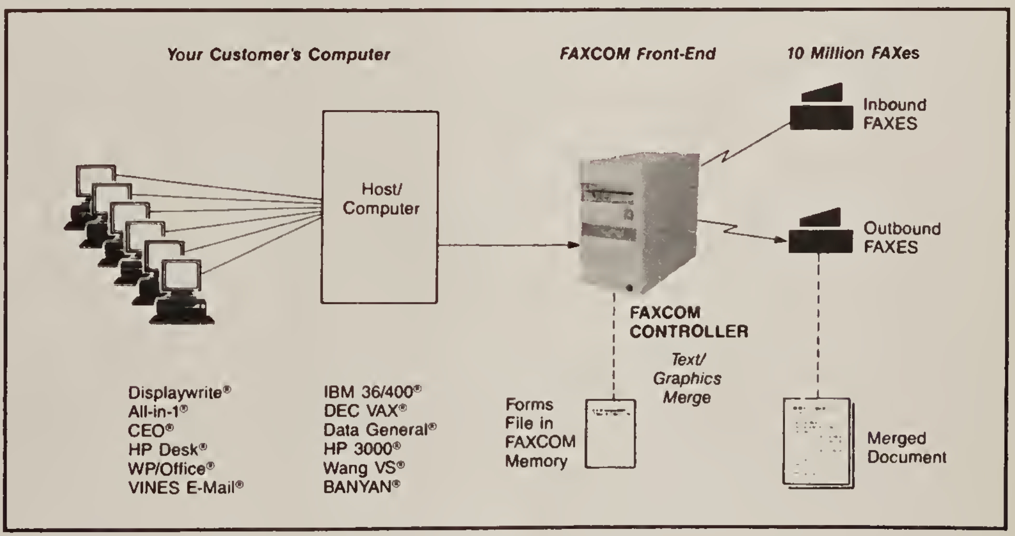

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PC package pumps up mainframe link

BY SALLY CUSACK
CW STAFF

Promising IS managers significant increases in micro-to-mainframe response time, Simware, Inc. has released Splitsecond, a personal computer-based software package.

Targeted for large IBM data center installations, Splitsecond is an add-on to the company's SimPC and Sim3278 VTAM connectivity programs and reportedly gives remote PC users the equivalent of direct-connect response time.

Operating with real-time, interactive-session host applications over asynchronous lines and modems, the program is ideally suited for data-entry tasks requiring repetitive screen access, according to the vendor.

Simware user Richard Malone, data communications manager at Independent Election Corporation of America in Lake Success, N.Y., said the package makes a remarkable difference, especially with the data-intensive ISPF/TSO screens. Using two IBM 4381 mainframes running CICS, Independent Election handles the proxy voting process for stockholders over X.25 dial-up lines.

Like a local connection

According to Malone, the company's technicians report a 50% response-time increase when calling the mainframe from their homes for maintenance purposes.

"The software gives the perception that you are locally connected to the host," he said.

The product employs a cooperative processing technique to reduce the transmission of redundant data when 3270 screens are relayed from the host to the desktop. It operates with both static and dynamic recall methods, allowing managers to choose the method best suited to application transmission needs.

The Static Screen Recall feature allows users to choose frequently accessed screens for capture on the PC. When the host determines that the screen it is about to send is similar to the one stored on the PC, it instructs the Splitsecond PC-component to retrieve that screen from PC memory. The screen is then displayed along with any variable information transmitted by the mainframe.

The Dynamic Recall function is used when accessing a series of screens not previously stored under Static Recall. By keeping track of images in buffer, only variable data is transmitted from the mainframe to the PC screen, and as many as 50 screens can be stored on the PC.

Lina Au, a systems analyst at Chevron Information Technology Co. in San Ramon, Calif., said she finds that the program runs faster in the dynamic mode. The company is using the product to test full-screen applications on laptops and full-size PCs.

"We use the static method when we set up a number of images with variable fields. [Professional Office System] is a good candidate for this mode," she said. Au noted that when running in static mode on laptops equipped with 2,400 bit/sec. internal modems, the program slows down without a hard disk. "On laptops without a hard disk, those that are limited to 720K bytes floppy storage, after SimPC and Splitsecond are installed, there is very little random-access memory left over." She said the company has been contacted and is working on resolving the problem.

The product has a few pricing components: Running with Sim3278 VTAM on the host, it is priced at $15,000; running with SimPC on the workstation, pricing is dependent on right-to-copy and starts at $11,000 for 50 copies. Simware is offering Splitsecond to existing customers for $1 through the end of 1990. There is a $5,000 implementation charge for installing the program.

Fritz

FROM PAGE 43

copper wires, which are subject to disruption, noise and failures. It only takes one driver to lose control and smash a car into a telephone pole.

Data transmission is different from voice service and out of necessity must provide a far higher level of reliability. It is unreasonable to expect a data center to continually redial calls because of link failures. West Virginia University discovered this the hard way when two critical ISDN lines failed. Both lines support synchronous applications, which require "nailed-up" links. Such links are expected to stay up all of the time.

The synchronous links experience random line failures on the average of once every 24 to 36 hours. Previous ISDN applications at West Virginia University were dialed up, used for a short period and then disconnected. Such transitory links were not up long enough to be affected by the sporadic outages.

In computer design, fault tolerance is commonly used to avoid failures or at least recover from them. However, some ISDN terminal equipment fails to incorporate comprehensive fault-tolerant design. Could it be that in the rush to get ISDN terminal adapters to the marketplace, some vendors have overlooked the necessity of engineering fault tolerance into their equipment?

Fault-tolerant design usually includes error correction, recovery from power failures and downed data terminal equipment. Most terminal adapters have support for these conditions designed into their equipment. The user programs a direct call number into the terminal adapter, which saves the number and attempts a reconnect in the event of a power or equipment failure.

What designers have overlooked is the possibility of a failure between the terminal adapter and the central-office switch. When this occurs, many terminal adapters are caught off guard. Failing to recognize that a line disruption has occurred, they make no attempt to re-establish the connection. Eventually, the terminal takes a time out, and the port is shut down.

It's incredible that all terminal adapters do not include fault tolerance for this kind of failure. The oversight is ironic in view of the fact that the Z.931 protocol used in ISDN equipment signals the re-establishment of the link to the terminal adapter. Thus, part of the terminal adapter "knows" that the link has returned but fails to pass that information on to the circuitry responsible for call establishment.

Vendor response was mixed when this issue was pointed out to them. One vendor admitted that line failures had been "overlooked" in the design of its terminal adapter. It offered assurances that the company would seriously consider engineering fault tolerance into its terminal adapters as quickly as possible.

After considering the matter, another vendor described the correction of the problem as a "feature enhancement." This vendor has promised to remedy the problem during the first quarter of 1990 but has indicated that its present crop of terminal adapters will require an "upgrade," which will not be free.

All of this points to a need for careful investigation on the part of ISDN customers. Ironically, just when selecting ISDN equipment should be getting easier, it's getting more complex. ISDN customers have to consider the various capabilities of terminal adapters such as supported throughput rates, interface type (V.35 or RS-232) and synchronous/asynchronous capability. Users also have been concerned about technical items that should be transparent to them, such as B channel rate adaption, which vendor's digital switch is supported and which switch generic is supported. Users must now know whether the vendor has included a proper degree of fault tolerance. These are the things that make consultants rich.

ISDN vendors must provide comprehensive fault tolerance as a standard feature in their terminal equipment. The operating companies must learn where ISDN's weak links are and work to improve them. Only then will ISDN be able to deliver on its promise of reliable service. For now, early ISDN users will continue to contend with the frustrating difficulties that haunt new technology pioneers.

Fritz is a data communications analyst at West Virginia University in Morgantown, W. Va.

U. Cal.

FROM PAGE 43

As part of the project, the university will be testing "full file transfer" using the OSI file transfer and access and management protocols between its own systems and those of the Swiss organization for nuclear research, CERN, Jordan said. The connection will allow University of California researchers to collect data for analysis from CERN's electron positron, the only equipment of its kind in the world, Jordan said. "This kind of power networking means we don't have to go to Switzerland" for the data, she added.

As director of library systems, Lynch is interested in Z39.50, an OSI-based library information retrieval protocol that is "wending its way through the international standards process," he said. His group is "grappling more and more with how to link our central on-line catalogs with workstations proliferating everywhere."

Lynch hopes that the OSI protocol will provide a standardized way for different types of workstations to access different institutions' information servers, he said. The university is working on another project with DEC to connect its own catalogs with those of Pennsylvania State University, using the OSI protocol on top of the TCP/IP protocols used by national academic and research networks.

Over the longer term, the university expects to use Decnet Phase V and OSI as an increasingly vital part of its communications network, both within its campuses and between its users and other academic and research institutions around the world, Lynch said. "I don't think OSI will replace anything else — it will share bandwidth with TCP/IP and [proprietary] Decnet. But it will be a major factor for the 1990s," he added.

"Is OSI an improvement over TCP/IP?" Lynch asked. OSI certainly provides more functionality in some areas, but the trade-off is that it is "byzantinely complex" to work with. "It took a couple of people a reasonable amount of months to do a TCP/IP implementation from scratch on an IBM 3090 a few years back; the whole protocol was in a manageable-size book that I could read." In contrast, "OSI has gotten gargantuan."

TCP/IP network management may also be simpler to deal with, if less functional, than the still-incomplete OSI protocols, Lynch said. "I know pretty much what TCP network management means; it deals primarily with IP routers. OSI at the upper levels is very complicated and still fluid. I suspect different people mean different things when they say, 'OSI network management.' "

Fault-tolerant systems bow

WALTHAM, Mass. — Chipcom Corp. last week announced its Online family of fault-tolerant systems, offering multichannel network architecture and network management functions.

Aimed at large sites running mission-critical applications, such as manufacturing and military environments, the Online Systems Concentrator offers redundant power supplies and redundant backbone cable links.

It supports up to three concurrent Ethernet, Token-Ring or Fiber Distributed Data Interface networks in any combination within a single concentrator, and it provides as many as 128 unshielded twisted-pair connections and 64 fiber connections in 8¾ inches of standard rack-mount space.

"The unit can be configured remotely by the network manager," said Stephen Diamond, Chipcom's director of marketing. "Network managers can do on-the-fly configuration and reconfiguration of the system from a central point."

The Online series is also offered with network management software — a multitasking, AT&T Unix System V platform that incorporates the Ingres relational database management system for performance optimization configuration and network diagnostics.

Scheduled for shipment in April, the Online Systems Concentrator (Model 5017C) will carry a list price of $4,450.

Finding Perfectsolution to network DOS file confusion

BY JOANIE M. WEXLER
CW STAFF

It probably did not occur to Microsoft Corp. over a decade ago that the number of files shared on a local-area network would someday grow to render DOS' 11-character file-naming convention inadequate.

However, now that some PC LAN efficiencies are being lost as users boot various applications and peek into any number of files to locate the one they really want, LAN-based document management systems, such as the one recently introduced by Softsolutions, Inc. in Orem, Utah, are finding their niche.

The document-intensive law office is a major market targeted by Softsolutions' DOS-based Perfectsolution 1.0, which was announced in December. One reason is that lawyers spend a lot of time revising boilerplate documents — such as wills and contracts — that may have been created and named by someone else, and they need a way to locate and access those files quickly.

PERFECTSOLUTION is compatible with any ASCII word processor, as well as with spreadsheet and graphics programs.

"There's a very big issue with losing files in law firms; a Wordperfect file name is simply not adequate," said Dick Robbins, a consultant at the Law Office Automation Center in Chicago.

Linda Logan, a systems analyst at the Los Angeles-based law firm of Paul, Hastings, Janofsky and Walker, is one Perfectsolution beta-test user who has decided to purchase the software. She said the software allows her users to cut document-hunt time from "what could be half a day to a few minutes."

Perfectsolution reportedly performs full-text searches of ASCII text and Wordperfect 5.0 file formats and also allows users to extend their document file names up to 70 characters.

Referencing user-generated document profiles, Perfectsolution will reportedly search across applications, servers and workstations for the name and location of documents using key words from various categories. The search takes seconds, according to the vendor.

Logan's firm is currently in the process of replacing a Data General Corp. computing environment with 900 IBM Personal Computer compatibles on Novell, Inc. LANs, which may eventually be linked via a T1 backbone. The international law firm previously used homegrown document management software, which supported word processing only.

Logan explained that she chose Perfectsolution because she wanted a product that captured the name of the creator of a file, could set up different document security groups and offered transparent accounting and billing functions. She also wanted the product to automatically archive or delete documents based on user-generated parameters.

Security makes the difference

Tom Bartley, a value-added reseller in the Phoenix office of Micro One, Inc., which specializes in selling computer equipment to law firms, sells both Perfectsolution and CMS/Data Corp.'s PC DOCS, which Logan also considered. He said that high levels of security access features are what differentiate the Perfectsolution product from its competitors.

He acknowledged, however, that the Perfectsolution product is not as foolproof for tracking files as PC DOCS, because, since PC DOCS is integrated into the Wordperfect program, it prohibits users from mistakenly saving documents under file names other than those assigned under the system and losing them. Unlike Perfectsolution, though, PC DOCS works only with the Wordperfect word processor, Bartley said, and requires Wordperfect Office, which he described as "an incredibly weak office automation product."

By contrast, however, Perfectsolution is compatible with any ASCII word processor, as well as with spreadsheet and graphics programs.

Logan added that she likes Perfectsolution's record-locking feature, which prevents other users from accessing a file already in use. She noted that she is looking forward to the next version of the software, which she said should allow easier and more transparent searches across multiple servers.

Document management systems differ from databases in that they allow users to retrieve live documents from wherever they are stored on a LAN into the applications in which they were created, rather than just provide reference information about documents.

Perfectsolution is priced at $2,495 for each installed server and $295 per workstation.

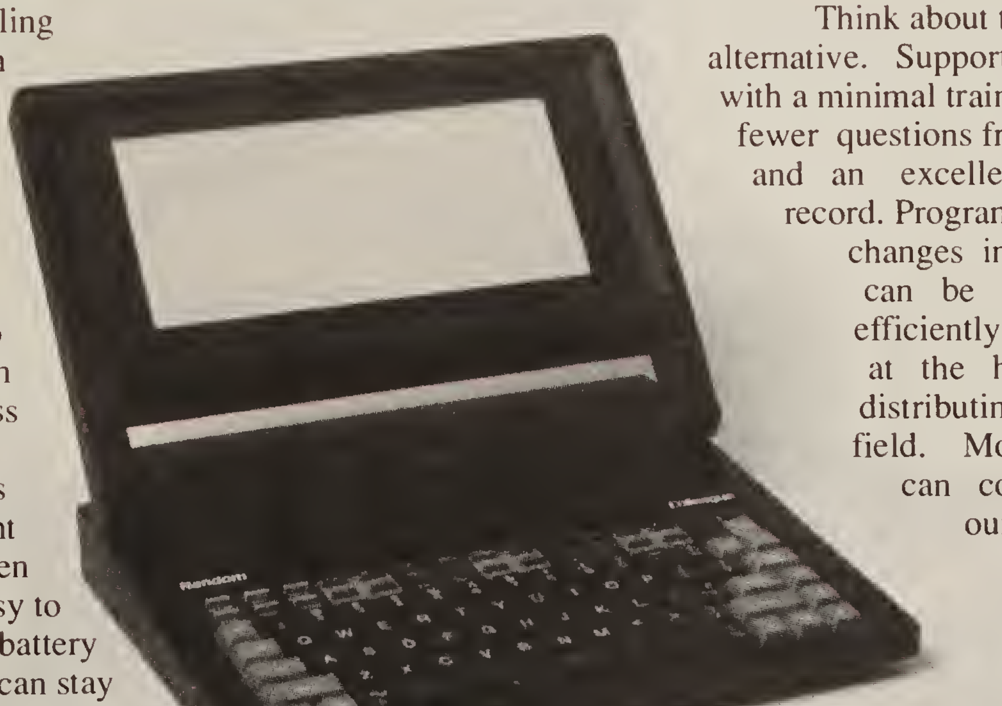
Thinking Laptop PC's?

Think Again.

We all know the laptop PC can be complex. The PC is a computer which requires a lot of training and support. Its moving parts may increase the likelihood of failure. The programs that run on PC's must be licensed, updated and distributed. Controlling information on each PC can be an intricate task.

The Colleague laptop terminal, an alternative to the laptop PC, offers a simple solution to host access. We can all use a little less complexity.

The Colleague is an inexpensive, light weight, full screen terminal that is easy to carry and a 15 hour battery means the charger can stay home. The modem included with every terminal comes with MNP which means a reliable, error free connection, even over cellular telephones. The 20 Auto-connect channels with phone numbers and log-ons allow a friendly host connection to be established by simply plugging in the phone line and turning on the Colleague.



The Colleague Plus adds word processing, capture and send routines, and nonvolatile file storage. This means it can capture on-line information, edit a file at any time, or send a file back to a host.

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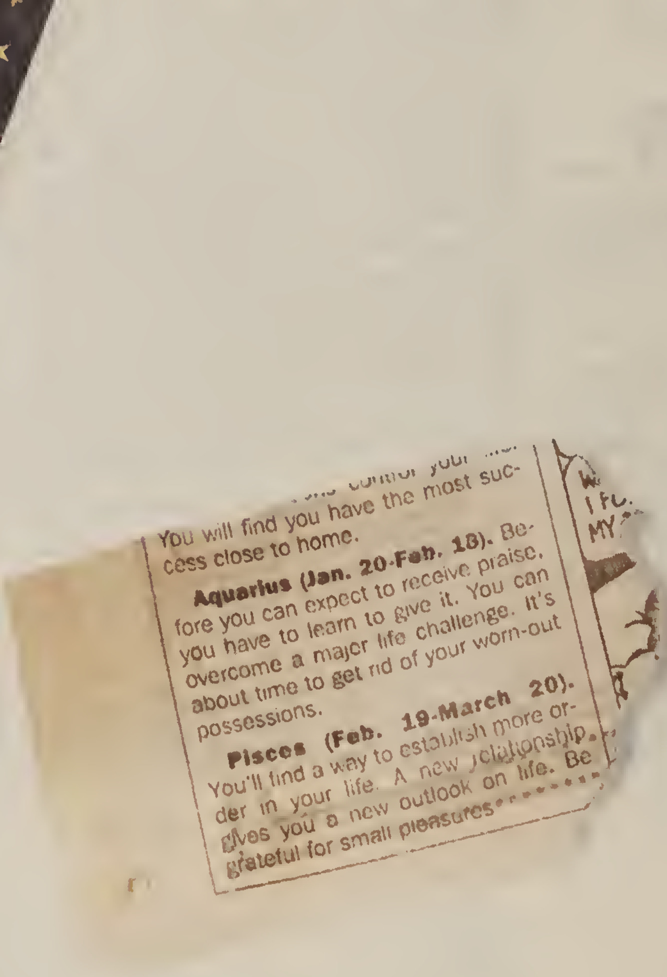

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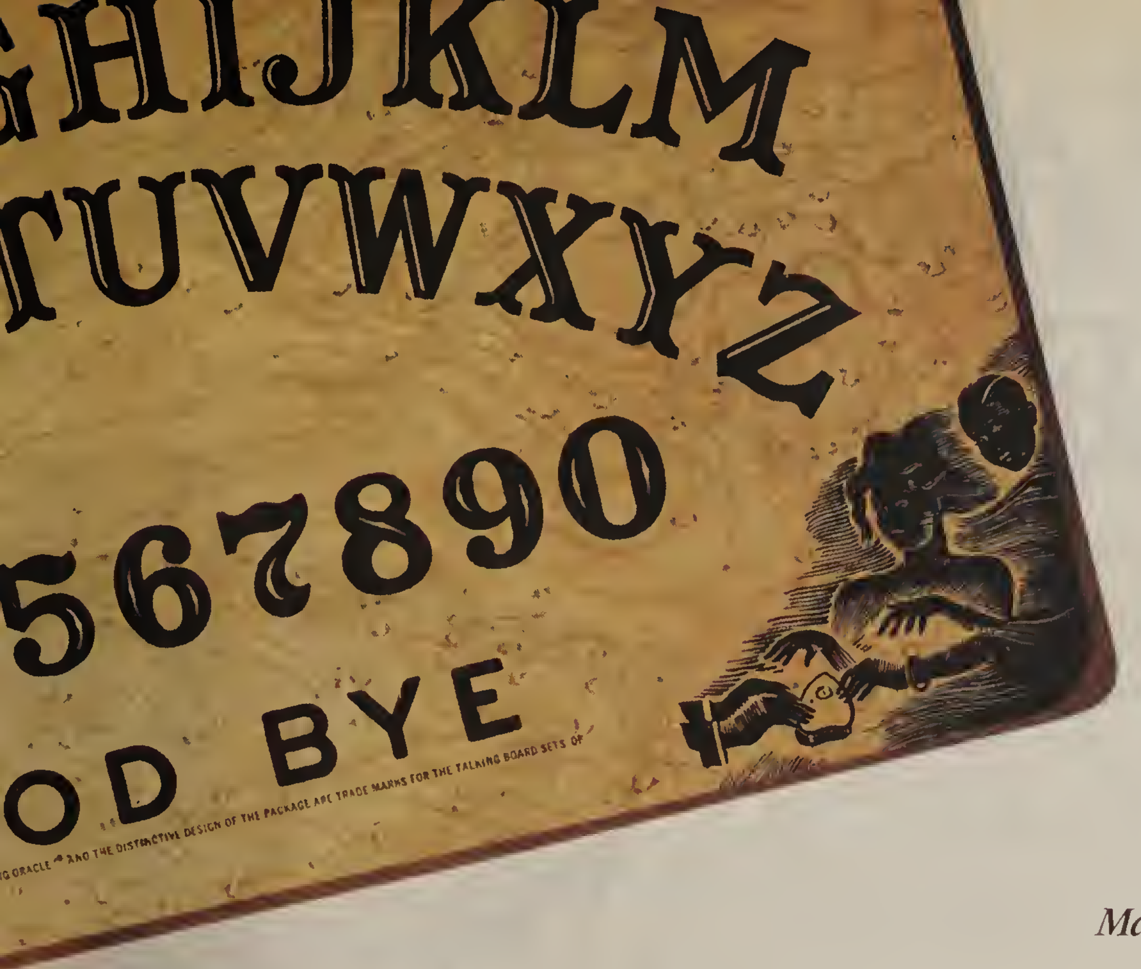
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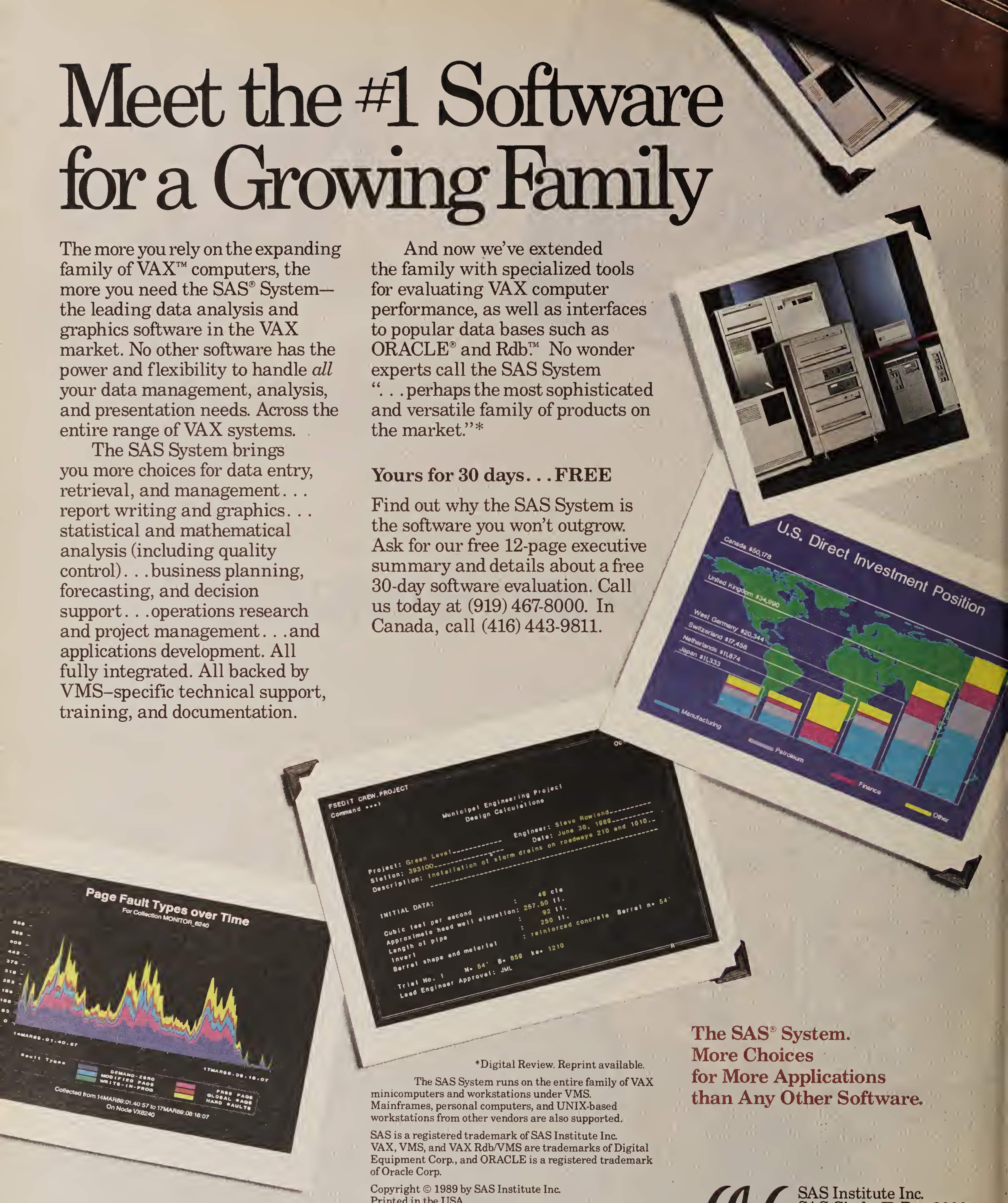

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FSEDIT CREW.PROJECT
Command ===>
                    Municipal Engineering Project
                        Design Calculations

                                    Engineer: Steve Rowland__________
                                        Date: June 30, 1989__________
Project: Green Level____________
Station: 393100_________________
Description: Installation of storm drains on roadways 210 and 1010._
             ________________________________________________________

INITIAL DATA:                          :       49 cfs
Cubic feet per second                  :   257.50 ft.
Approximate head wall elevation:           92 ft.
Length of pipe                         :      250 ft.
Invert                                 : reinforced concrete   Barrel n= 54"
Barrel shape and material
                    N= 54'   B= 858   ke= 1210
Trial No. 1
Lead Engineer Approval: JML
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MANAGER'S JOURNAL

EXECUTIVE TRACK

John P. Singleton, the top information systems executive at **Security Pacific Corp.** in Los Angeles, was given the additional title of chief operating officer in a top management shake-up earlier this month. Singleton retains his titles of vice-chairman of the corporation and chairman of Security Pacific Automation Corp., the IS unit. Former COO George Moody became vice-chairman of the executive committee as part of a reshuffling in which Richard J. Flamson resigned as chief executive officer and was replaced by Robert H. Smith, president and CEO of Security Pacific National Bank.

……

Herbert Drucker was named general manager and chief information technology officer at **The American Red Cross'** national headquarters in Washington, D.C.

Drucker was most recently the senior director of IS at Johns Hopkins Hospital in Baltimore. Prior to that, he was director of business information systems at the defense electronics division of Gould, Inc.

Drucker is the founder of Training for Opportunities in Programming, a nonprofit volunteer organization aimed at preparing underemployed inner-city residents for careers in computer programming. He is a graduate of D.C. Teachers College (now the University of the District of Columbia) and lives in Severna Park, Md.

……

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

On the leading edge with ISDN

Cost and risk justification are vital to American Express' integrated service decisions

BY ELISABETH HORWITT
CW STAFF

How does a Fortune 500 company manage both the cost and risk justification of a still-embryonic technology such as Integrated Services Digital Network?

American Express Co.'s answer is the same as it would be for any other service — on the basis of cost savings and quality of service improvement. So says Robert Haas, vice-president of planning and engineering at American Express' Travel Related Services (TRS) Worldwide Telecommunications division in Phoenix.

So far, one ISDN application has successfully undergone the company's cost-benefit evaluation process and has been installed at a limited number of sites. The company plans to add another ISDN application by the end of this quarter but declines to specify what it is.

The application now in place makes use of AT&T's ISDN Primary Rate Access service, ISDN-compatible private branch exchange (PBX) systems and automatic number identification offering. When a customer dials in on Amex's 800 service number, the ISDN part of the connection automatically provides the caller's telephone number. The number is then used to call up the customer's file on a host and send it to the service representative's screen within seconds of the call coming in.

An initial trial of the application in 1988 resulted in a 16% improvement in performance, allowing representatives to take less time on the telephone and improving customer service as a result, Haas says. The ISDN application's cost benefits are derived from such production improvements, although Haas declines to financially quantify them.

MICHAEL NORTON

Amex's Haas and Schoneberger *found ISDN simplified users' lives*

The travel services giant generally tries to do a cost-benefit study of an application or technology and then introduce it to an entire market area of the company, such as the travel or credit authorization area, Haas says.

The ISDN service would have warranted a similar treatment, except that Amex could not cost-justify the T1 links currently necessary to access a long-haul ISDN service at smaller sites, Haas says.

Thus, the company had to deploy the application on a site-by-site basis. To cost-justify ISDN for those smaller offices on a nationwide basis, the regional Bell operating companies would have to make the lower-cost Basic Rate ISDN connection ubiquitous on the local loop, Haas says.

"The trouble is a chicken-and-egg

Continued on page 53

Computer ethics: More than bits and bytes

BY ALAN J. RYAN
CW STAFF

The required course list for computer science students at Polytechnic University in Brooklyn, N.Y., has an unusual and timely addition: ethics.

The liberal arts course, entitled "Information, Society and Man," teaches students to realize that there are ethical decisions to be made in computing professions and that professionals in the field have a responsibility to society to act in an ethical manner, according to Jane Robinett, a humanities professor who teaches the course.

The whole idea of ethics in computing has become a more prominent issue of late, especially since former Cornell University graduate student Robert T. Morris was recently tried and convicted on charges of creating a computer virus on the Internet computer network.

"When students begin to see that especially on a network they have a responsibility to hundreds of people they will never see," they realize that their actions can directly affect others, Robinett said.

While other disciplines have long followed a code of ethics, Robinett said, those same standards have not become as visible in the world of computing. For a civil engineer, for instance, the key is to build safe public structures.

Information, the professor maintains, "affects people as widely as any structure that a civil engineer builds," she said. In one case study in the course, a programmer realized that loading a particular program onto a mainframe would cause the slowing of the response time of an emergency vehicle dispatch system. When the programmer decided to point that out to her superiors, she was fired and eventually brought legal action against the company, Robinett said.

In the research and development community, Robinett said, more ethical dilemmas are on the way because of artificial intelligence and decision-making systems.

While AI systems are capable of "learning," Robinett said, people often mistakenly compare that with the type of learning children experience. Children learn ethics from the people around them — parents, friends, the media, teachers and others. "But we have no idea at all whether or not it is possible to program some sort of ethical basis or ethical bias into a system."

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William R. Brittain

Learn to mind your planners

Planning is a specialty that nearly everyone in an information systems shop is expected to know but that few do well. Unfortunately, planning is often confused with project management, which in turn is often confused with the ability to prepare Gantt charts and Program Evaluation and Review Technique, or PERT, charts.

But project management is not planning. IS managers should recognize the unique role of systems development planning as a distinct phase of the life cycle, requiring a dedicated individual or group of individuals.

The project planner is as unique a role as the systems analyst, systems designer, programmer or project leader. Confusing those roles means that one inevitably suffers.

Some researchers associate planning skills with the logical, analytical functions of one hemisphere of the brain (typically the left hemisphere for right-handed people). The other hemisphere of the brain is associated with holistic, intuitive thinking.

People are normally dominated by one hemisphere, and the researchers suggest that planners are dominated by the logical, analytical hemispheres of their brains.

The intuition-dominated leaders do have a plan; they just don't communicate it in the formal, documented way that planners do. Many successful project managers never prepare a formal plan that they actually intend to use, but they still know what they are doing and how to get the project done.

To these people, planners seem like uptight, overly formal paper-pushers. To planners, the intuitive types appear to be a group of undisciplined, mysterious, frustrating vigilantes.

Regardless of a project leader's style, planning skills such as estimating and scheduling develop with experience. Treating planning as a specialty enhances that development. Then, working with the project leader, a plan can be developed and maintained that is better than either could have come up with by themselves.

Over the years, critics have blamed budget overruns, missed deadlines and failures to meet customer needs on everything except the most obvious — the plan.

Systems development planning is a unique function. It is a resource for project management and should not be confused with the function of project management.

By recognizing the unique functionality of planning and allocating unique resources to it, the project manager can be freed to concentrate on the real joy of project management — namely, the success of the people on the project.

Brittain is a senior programmer/analyst at Capital Holding Corp. in Louisville, Ky.

CALENDAR

Eastman Kodak Co. has been widely hailed as a pioneer in outsourcing the information center. For companies that are considering outsourcing or workers who say, "It's not for me," The Yankee Group will explore whether outsourcing is an internal threat or internal opportunity at its upcoming conference, "Outsourcing: The Kodak Effect."

Featured speakers at the conference, to be held in New York from Feb. 28-March 1, will include Henry Pfendt, director of information technology services, and Katherine Hudson, vice-president of information systems at Kodak. Also represented will be companies whose executives evaluated outsourcing but decided not to move in that direction, such as Avon Product, Inc.'s Senior Vice-President Ray Perry.

For more information, contact Denise Sharp at The Yankee Group, Boston, Mass. (617) 367-1000.

FEB. 11-17

Networld '90. Boston, Feb. 12-15 — Contact: H.A. Bruno, Englewood Cliffs, N.J. (201) 569-8542.

Electronic Data Interchange Conference. Arlington, Va., Feb. 14-15 — Contact: Phillips Publishing, Potomac, Md. (800) 722-9120.

Motivating and Managing Computer Personnel. San Francisco, Feb. 14-15 — Contact: The Institute for Computer Capacity Management, Milpitas, Calif. (408) 954-0114.

Conference for Information Processing Executives. Atlanta, Feb. 15 — Contact: Kathy Collins, International Data Corp., Framingham, Mass. (508) 935-4258.

Electronic Data Interchange: Letters of the Law Seminar. Dallas, Feb. 15-16 — Contact: Data Interchange Standards Association, Alexandria, Va. (703) 548-7005.

FEB. 18-24

ACM Computer Science Conference. Washington, D.C., Feb. 19-22 — Contact: The Association for Computing Machinery, New York, N.Y. (212) 869-7440.

Health Care Information and Management Systems Conference and Exhibition. Chicago, Feb. 19-22 — Contact: American Hospital Association, Chicago, Ill. (312) 280-6168.

Electronic Data Interchange Seminar. New Orleans, Feb. 20-21 — Contact: Kari Pike, Washington, D.C. (202) 887-1375.

Digital Data Exchange Implementers Conference. Palm Springs, Calif., Feb. 20-22 — Contact: DDES, Vista, Calif. (619) 758-9460.

Electronic Imaging '90. Washington, D.C., Feb. 20-22 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

Information Security Managers Symposium. San Diego, Feb. 20-22 — Contact: MIS Training Institute, Framingham, Mass. (508) 879-7999.

Executive Information Systems Briefing. New York, Feb. 21-22 — Contact: Infoline, New York, N.Y. (212) 557-3400.

Inventing the Future of Computing and Communications. Cambridge, Mass., Feb. 21-22 — Contact: Patricia Seybold's Office Computing Group, Boston, Mass. (617) 742-5200.

The Role of Technology in Education. St. Charles, Ill., Feb. 21-23 — Contact: North Cook Educational Service Center, Glenview, Ill. (312) 998-5065.

Western Communications Forum. San Diego, Feb. 21-23 — Contact: National Engineering Consortium, Chicago, Ill. (312) 938-3500.

International Conference on the Management of Technology. Miami, Feb. 22-March 2 — Contact: University of Miami Conference Center, Miami, Fla. (800) 633-8647.

ISDN: Trial by transparency

Perhaps the strongest evidence that American Express Travel Related Services did a good job of implementing an Integrated Services Digital Network (ISDN) application is the lack of negative impact on both users and customers.

The ISDN-based customer service application has "simplified users' lives in that they don't have to ask quite as many questions" to verify that they can talk to the caller about a particular account, says Linda Schoneberger, director of the travel division's Applied Technology Group.

"People on the floor might know it was ISDN because we've mentioned it; otherwise, it is like any old call, except you get more information," Schoneberger says.

Not that the company imposes a new technology or application on its users without their knowledge, Schoneberger says. "We really turn the evaluation process over to the users, saying, 'Here's a technology; now what does it mean to you?' Some applications are accepted very readily; others are kicked out the door."

Transparency to customers is a key criterion by which Amex determines whether to implement a new technology or application, Schoneberger says. The only change that customers are likely to notice from Amex's ISDN implementation is the improved efficiency with which representatives can respond to queries.

"If there is one thing that annoys customers, it's being asked 40 questions," she says.

ELISABETH HORWITT

Amex

CONTINUED FROM PAGE 49

situation where carriers are not willing to invest because they don't know what the market will be," he says. "We would like to think that ubiquitous ISDN will happen earlier than within two years, but it probably won't."

The real ISDN savings will come when local and long-distance carriers get together to provide end-to-end ISDN with on-demand bandwidth, "so I only pay for bandwidth when I use it," Haas says.

ISDN implementation costs can be substantial. Since local carriers still do not offer ISDN connections to long-distance services, users must piggyback AT&T's ISDN offering onto T1 links, according to Thomas Nolle, president of Haddonfield, N.J., consulting firm CIMI Corp.

AT&T's Primary Rate Interface service costs $400 per month plus a $3,000 installation charge, over and above the cost of the T1 link, Nolle says. In addition, users such as Amex must pay the cost of upgrading AT&T's PBX systems to handle ISDN Primary Rate Interface, which is $8,500 for a System 75 and $35,000 for a System 85.

ISDN cost benefits, which derive from more flexible allocation of bandwidth between user devices and AT&T services, only start to kick in when a given site uses four or more T1 lines, Nolle says.

Managing the vendor relationship becomes a critical factor with leading-edge technology. Haas' group at Amex "got proactive with the service and equipment vendors" in order to ensure the availability of the right products at the right price, Haas says. "But we do that with every service, even plain old telephone service."

For example, the company has been pressuring AT&T to lower the cost-per-call of its automatic number identification feature, since "three cents per call is hard to justify in cases when the call only lasts a minute," Haas says. AT&T lowered automatic number identification pricing from 3 cents to 2 cents per call last fall.

Amex may be pushing even harder than usual, however, to get certain vendors to speed up their introduction of offerings that will be crucial to the firm's future ISDN strategy. While Amex's first ISDN service uses AT&T offerings, the company is currently testing services with both MCI Communications Corp. and U.S. Sprint Communications Co., "so we don't have to put all our networking eggs in one basket," Haas says. So far, only Sprint has officially announced an ISDN service.

Amex is not passively waiting for the carriers to decide the fate of its ISDN strategy, however. Representatives from Amex's telecommunications group have joined the three major long-distance companies' user groups, as well as the ISDN Users Forum and several Bellcore committees. Haas' staff members are also trying to speed up the efforts of standards bodies efforts to complete the final portions of ISDN protocols, he adds.

MANAGING THE vendor relationship becomes a critical factor with leading-edge technology.

As one of the early users of the technology, Amex has had far more input into the actual development of products based on the technology, Haas says. "That's an advantage in that we can push things the way we want," he says. "The disadvantage is that it takes so long."

"ISDN is not a new technology but a protocol that uses technological components that exist today, so implementation is not a high-risk situation," Haas says. There is some risk, however, that the carriers that have been cautious about implementing ISDN so far will back off from the standard, pulling the rug out from Amex's long-term ISDN strategy, he concedes.

"But we don't set forth a strategy without having some very good backups and exits," he says. "We don't allow ourselves to get painted into corners."

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BOOK REVIEW

Looking at the foundation of the information we use

SILICON DREAMS
By Robert W. Lucky
St. Martin's Press, $19.95

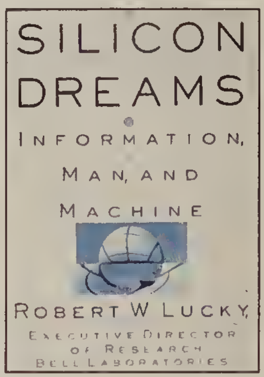
Every day, information systems managers, specialists and industry writers work in their field, sifting through tons of information — all without ever stopping to consider, "What exactly *is* information?"

When Robert Lucky, executive director of research at AT&T Bell Laboratories, won a grant from the Marconi Foundation to pursue any project he felt like doing, he chose to write a book aimed at laymen to examine this question.

Lucky's idea was simple: There was no broad study of what constituted "information," the problems of transmitting it and the ways of thinking about it. Is there a way to achieve perfect processing of information on computers? Do pictures convey information better than words? Is it worth it to do this with a machine? Does it even matter? Are there answers to this?

The result is *Silicon Dreams*, an often worthwhile, occasionally frustrating look at the basic stuff of what the IS community handles without a second thought each day. Topics range from information theory to speech synthesis, word processing and pictorial representation on computers.

Lucky states at the outset of his book that his aim is to avoid the pitfalls of deep scientific examination or banal computer operation instructions and instead to write a "how-come" rather than a "how-to" book. When he succeeds, *Silicon Dreams* is an entertaining, illuminating book that helps make information and its manipulation understandable down to its most basic element, the bit. When he doesn't, the book can occasionally traipse through a minefield of arcane concepts guaranteed to scatter thoughts in several different directions at once.


SILICON DREAMS
INFORMATION, MAN, AND MACHINE
ROBERT W LUCKY
EXECUTIVE DIRECTOR OF RESEARCH BELL LABORATORIES

While looking at something as small as a bit may seem somewhat picayune, it is central to Lucky's basic point: Although humans cannot personally process too many bits of information (a rather meager 50 bits per second, far fewer than the number our nervous systems actually receive), machines can't really outdo that on a substantive level because we can't give them *any* cognitive processing ability. This human element underlies the whole book, and Lucky never loses sight of that.

Lucky's gift is his ability to define a hierarchy of concepts and then examine the problem of processing information at each level. His book is about information, but he never forgets that information is a lower level that hopefully produces knowledge and wisdom. In trying to define information, he starts out with raw data; moves to information, which is organized data; examines pooled information, or knowledge; and finally arrives at wisdom.

Similarly, when examining the processing of English, he starts with the smallest element (and simplest to process), letters. This leads to words, syntax and semantics and ends big at meaning. Lucky may examine a lot about words and letters, but he never fails to forget the search for the end product — meaning. The establishment of that foundation lends credence to his discussions and makes them more useful than a sheer look at the mechanics of the processing.

Often, Lucky gets too deep into his subject. The reader can find on his hands an esoteric tome diving into theories of interest to the information systems engineer and few others. (To his credit, Lucky does use his introduction to warn general-interest readers away from the pitfalls of reading about such user-friendly topics as error-correcting codes.)

Also, throughout *Silicon Dreams*, Lucky struggles with an odd tone of self-doubt about his ability to convey any sense of the nature of information. While it is refreshing to encounter such a thoughtful attitude toward the examination of such a difficult subject, this may put off readers who, accustomed to having a writer's thesis jammed down their throats, may be confused by such self-speculation. However, Lucky knows through both instinct and experience the ephemeral nature of his subject, and he doesn't shy from telling the reader what is known and what is not.

This approach is also reflected at the end of each chapter, where Lucky has placed some of his older essays on the nature of information as a kind of balloon-puncturing tag. His purpose is clearly to explode any kind of pompous tone he feels his writing may have taken on. Perhaps because of this, the essays, entitled "Reflections," make for some of *Silicon Dreams'* best reading.

Silicon Dreams is not a light read, nor does it reach a "conclusion" per se. But it does retain an optimism about our ability to use the computer as a real tool for information exchange, and its insights are not to be lightly dismissed.

DONALD ST. JOHN

St. John is *Computerworld*'s chief copy editor.

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Systems must be engaged for proper handling on turns

BY KATIE CRANE

In the mid-1980s, Rank Xerox (UK) found itself facing a fight for its life. The crisis began with a profit plunge in 1982, when revenue dropped from 51 million to four million pounds. As time went on, no rebound was forthcoming. A slump of that magnitude would have been a matter for grave concern at any point, but in this case, says Paul Chapman — then director of business management systems and quality — the timing was particularly bad. Xerox Corp., the parent corporation, was struggling to keep its footing in the worldwide photocopier market, where it had slipped from a clear front-runner position to a one-third share. The last thing it needed was a problem child.

Realizing that top Xerox decision-makers had begun to question its viability and that its very survival was at stake, Rank Xerox decided that extreme measures were called for. In fact, according to Chapman, who is now director of customer service at Rank Xerox Ltd. (the Xerox organization covering all of Europe), there is only one word for what happened next and that is "revolution."

Chapman says the turnaround began in 1986 when Rank Xerox appointed a new managing director, David O'Brien, who "set about making up for lost time with a vengeance."

O'Brien had substantial experience in information technology and was untainted by exposure to past procedures, which Chapman says had handcuffed both Rank Xerox and Xerox itself to a weight of bureaucratic baggage and impaired innovation. He was thus able to frame a new mission for Rank Xerox. Within four years, he says, 50% of the company's revenue would come from products other than copiers. Since they were starting from a position of 10%, Chapman says, this was a challenge born of both vision and desperation.

ANDY FREEBERG

Rank Xerox's Chapman and Xerox's Barron *join forces to create team-oriented business systems structures*

O'Brien believed that the best way to serve customers was to reorganize around accounts, not products. That, Chapman explains, "meant implementing a business architecture based on an integrated, cross-functional team approach." To do it, Rank Xerox had to change from a strictly hierarchical organization to one that encouraged what Patricia Barron, Xerox's director of corporate information management, calls "cross-organizational dependencies."

The way Chapman explains it, Rank Xerox wanted to integrate business objectives, management roles and responsibilities and business processes and then support all of these elements with state-of-the-art information technology and networked office systems. So Rank Xerox began a three-year strategic process to re-engineer its business processes, an experience Chapman says was "no gentle stroll" but instead was fraught with plenty of "bloody sessions" along the way.

Today, more than three years into the process, profits at Rank Xerox have tripled; revenue has increased more than 40%; the copier business is growing at rates not seen since the early 1970s; revenue from the non-copier products — although not yet at the 50% target — is growing at two times the rate of the copier business.

What's even more impressive is that now when Xerox executives ask questions about the UK operation, it isn't demolition they have in mind but emulation. According to Barron, the model of business restructuring and information systems redesign that Rank Xerox (UK) pioneered is now "snowballing through Xerox."

In fact, both Barron and Chapman — who is currently on special assignment at the Xerox corporate office in Stamford, Conn. — are pushing that snowball along as members of a task force that operate under the name Business Architecture Team.

So far, in the U.S. alone, development, manufacturing, marketing and the company's corporate offices have begun making similar strategic changes.

Harvard Business School professor James Cash says that organizational redesign supported by information systems is an idea whose time has come at many major corporations. Like Xerox, most organizations he works with are trying to transform their enterprise into a "fast cycle" mode that permits quicker and more effective responses in the face of intensifying competitive pressure.

"You don't get to be a fast-cycle company without redesigning the organization," Cash says. "Information technology is the key resource that makes it possible."

"When it became possible to deliver information technology to every individual in a company," Cash adds, "we began laying the foundation for truly dramatic organizational changes."

U.S. Shoe Corp. was on its way to another goal when it made that discovery. What started as a project to pare $2 million from the IS overhead expense has turned into a three-year "total quality project" that affects the entire domestic footwear business, according to Carol Biemel, vice-president of IS at the Cincinnati shoe company. Reducing costs was initially the primary objective," Biemel explains, "but it became the tip of the iceberg when the whole organization rallied around the project."

Biemel started with the premise that U.S. Shoe could cut IS costs by eliminating the mainframe in favor of departmental

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Exposing outdated assumptions
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Crane is a free-lance writer based in Norwich, Vt.

Handling

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systems supported by smaller computers linked by local-area networks. In theory, at least, Biemel predicted the company could reduce costs by as much as 40%. But, she says, even after they concluded it was technically possible, they had to address the fact that implementing such a change meant that every department would have to discard the systems they knew. She and her staff would have to replace those systems with new software that would work on the departmental computers. At that point, she says, the project ceased being an IS project and started being a business project.

> "THE IMPETUS for change arose from the question: Can information technology help us be a more efficient company?"
>
> CAROL BIEMEL
> U.S. SHOE

According to Biemel, "The impetus for change arose from the question: Can information technology help us be a more efficient company?" She adds that the "how-to" involved "looking at the entire business process — from taking orders to shipping shoes — to find out how we can be more competitive and eliminate unnecessary steps in the process."

Ralph Loftin, a longtime management consultant turned chief executive officer of a software development firm, says it is inevitable that companies look inward at operations.

He says that businesses today need to organize for flexibility so that they can quickly redeploy all available resources to take advantage of emerging opportunities. According to Loftin, "You make resources fluid by moving people around, erasing reporting lines and breaking down all the traditional barriers to create what Rosabeth Moss Kanter calls a 'free exchange culture.'" Loftin says she believes that information technology is one of the few enablers for this kind of change.

According to Cash, the Xerox experience is a good example of "interfunctional integration — true integration, where they are redefining functional boundaries, not merely tightening coordination."

Barron confirms that boundaries at Xerox are becoming blurred. "Customers don't care if they are talking to service, distribution, sales or marketing. To them, we're just Xerox." She calls this kind of operational change "re-engineering the business process" and points to information technology as the integrating mechanism.

Index Group, Inc. consultant Virginia Reck says she agrees that re-engineering is the latest trend, but she also stresses that most companies are in the planning rather than the doing stage "because they just woke up." Reck says that at this point, "most companies are still defining the elephant — and the enormity of the elephant scares them!"

There are enterprises for which technology-enabled business change is already a well-established habit. John Hull works for one of them. According to Hull, executive vice-president at Reuters America, virtually every transaction product his business provides depends on information technology.

"What Reuters sells is technology," Hull says. "We computerize access to exchanges and information sources, distributing information and, in some instances, creating a central focus where none existed before."

One of Reuters' latest endeavors, for example, is Dealing 2000, an all-electronic worldwide currency exchange. Dealing 2000 is built on the foundation of two earlier services — the Reuter Monitor, which delivers financial news and statistics as well as money market and currency exchange rates to workstations on financial traders' desks and Dealing, a service introduced in 1981, which allows subscribers to execute trades via those terminals and Reuters' network. What Dealing 2000 adds to the process is automated matching of bids and offers as well as transaction execution driven by Digital Equipment Corp. VAX computers.

Before this last piece fell into place, Hull says that the Dealing system was handling roughly 50% of the world's foreign-exchange business. Now, the company hopes to convert that share into commission as well as subscriber income by charging a flat fee to initiators of completed trades.

Foreign exchange is not the only financial market that Reuters is playing in. It also operates a service called Instanet, which links buyers and sellers of equity stocks. And it is eyeing possibilities in other trading areas, such as a venture with the Chicago Mercantile Exchange to automate futures trading for the creation of a round-the-clock market.

Reuters is still in the information business, but it is a much more broadly defined business now than ever before. Technology, Hull observes, is changing the expectations of Reuters customers. They are migrating to technology, he says, because they know that they can't conduct the volume of business they need to conduct by "waving their hands and fingers at each other or yelling and screaming." At one time, keeping up with customer requirements meant using carrier pigeons to relay news across a gap in Germany's telegraph system. Today, it means using computer and networking technologies to literally create unified world markets.

Reuters' Hull

Not all companies are as naturally adapted to information-driven change as Reuters, but many are confronting the need to revamp business processes and discovering that progress and information often go hand in hand.

Exactly what has to change if companies are to re-engineer their business processes? "Strategy or technology — or both," says John Sifonis, a vice-president at Temple, Barker and Sloane's New York consulting offices. "Work flow and policies," says James Fischer, Arthur Andersen & Co.'s managing partner of technology services. "Rules and information," says Rank Xerox's Chapman.

Arco's Porter (left) and Foster

Chapman describes how Rank Xerox undertook its three-year business development planning process. "We started at the very top and worked down through the organization, defining a new strategy and outlining emerging roles and responsibilities," he explains.

When they heard what was to be expected, most managers complained that they did not have the information they needed to run the business. So along with his colleagues, Chapman — who calls himself the dedicated facilitator for the process — began to identify what he calls the rules (procedures, practices and guidelines) and information that the various managers needed to fulfill their new roles and responsibilities.

"We created a database to find the gaps and mismatches and identified nearly 5,000 specific problems to be overcome," Chapman says. Even when duplications were eliminated, he and his team were left with 1,200 problems to fix.

"What is interesting," Chapman says, "is that two-thirds of those problems related to rules and only one-third to information." The conclusion: Information alone isn't enough. First, the managers must work out what rules they need to run the business.

"You can't change a company with the technology alone," Chapman says. "You have to make other changes in the way the company is managed. But neither can you run forever with only the management changes; you have to be willing to invest in information technology."

At its UK subsidiary, Xerox learned that it could fix the rules without large investments and that those fixes yielded savings large enough to fund certain changes in information technology.

What Chapman calls rules, Andersen's Fischer calls policies. Fischer says he believes information technology is the last new frontier for making changes in business policies — how companies account for things, how they grant credit, how they set quality standards, etc.

As an example of how IS can clear the way for beneficial policy adjustments, Fischer mentions a manufacturer of preprinted forms. That company, he says, installed an information system to monitor the customers' use of forms, which in turn enabled the supplier to ship replacements just in time. By taking over the customer's inventory control, the forms manufacturer squeezed out its competition, a major accomplishment in an industry threatened by competition from desktop publishing and photocopying.

The design, production and distribution processes are also ripe for change, says Fischer, who expects that artificial intelligence and imaging, in combination with cooperative processing and work-group computing will enable major alterations of work flow in these areas.

Sifonis suggests that companies using information technology to redesign their business process are engaged in a kind of "internal leveraging." That is exactly what is happening at Arco Alaska, according to Jim Porter, Arco Alaska's manager of administrative and information services and his colleague Curtis Foster, manager of materials, purchasing and contracts.

Last year, the two implemented a $7 million materials and purchasing system. "Once installed, we saw things we could

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do with the system that we hadn't seen initially," Porter says.

"It was a natural building block to EDI," Foster claims. Electronic data interchange (EDI) is not a new technology, and linking suppliers and buyers is not a new idea. But to Foster, whose Anchorage-based department generates more than 110,000 line items of orders annually from suppliers as many as five time zones away, it is an enhancement that will lead to meaningful payoffs.

Sifonis says changes such as those at Arco Alaska often start out as evolutionary but can become revolutionary. Porter and Foster hope he is right. They say they see even more promising opportunities growing out of the EDI link to suppliers. Foster, for example, envisions what are now largely paper-pushing jobs becoming more analytical, and if that happens, he is hopeful that individuals in his department will be able to seek out and negotiate better deals.

Similar evolutionary changes are taking place at U.S. Shoe, where just a year into its project — much of which was spent addressing operational issues — the company has implemented a pilot program in the factory linking U.S. Shoe's factory with its suppliers of insoles and outsoles.

Allen-Bradley's Reddy

U.S. Shoe's Biemel says she figures that the new system, which eliminates the need for a warehouse and a purchasing agent, will save the company as much as $500,000 in inventory and handling this year on just those two categories of supplies. Further, the system is evolving into a full-scale just-in-time system for receiving and processing materials from suppliers.

Perhaps even more important, Biemel says, is how business changes like those at the factory are mushrooming in other parts of U.S. Shoe. IS is also using the success of the pilot to convince other areas of the business to consider making similar changes. For example, she has talked to the people in the home office who take orders and do master scheduling, hoping they could learn from the changes at the factory.

Jim Reddy, director of data communications and information systems at Allen-Bradley Co. in Milwaukee, declined to talk about the kinds of critical adjustments Allen-Bradley is making, because describing them would expose the company's competitive strategy — a telling commentary on the power of such changes. Other executives expressed the same sentiment.

Nevertheless, Reddy did talk about what he calls the synergy between the IS and business functions at Allen-Bradley. "We play off one another," Reddy says. "Say a user asks for better market information. Because our IS organization is close to the marketing function — we sit on task forces, attend strategy meetings and sales conferences and build personal relationships with the managers — we bring a lot more [than we used to] to the development effort." Best of all, he says, "we can see opportunities to integrate applications across functions. Before you know it, "we're developing an expert system that will support more than the user's original intent."

Everybody involved in making such fundamental changes agrees on one thing: It isn't easy. It is risky and frustrating and often threatening to people who are used to the old way of doing things. But, say the experts, when a firm's survival is at stake, you do what you have to do.

Reck says it best: "Making these kinds of changes is not for the weak of heart. It takes a determined corporate culture, strong leadership and managers with the stamina of Attila the Hun to drive the process." •

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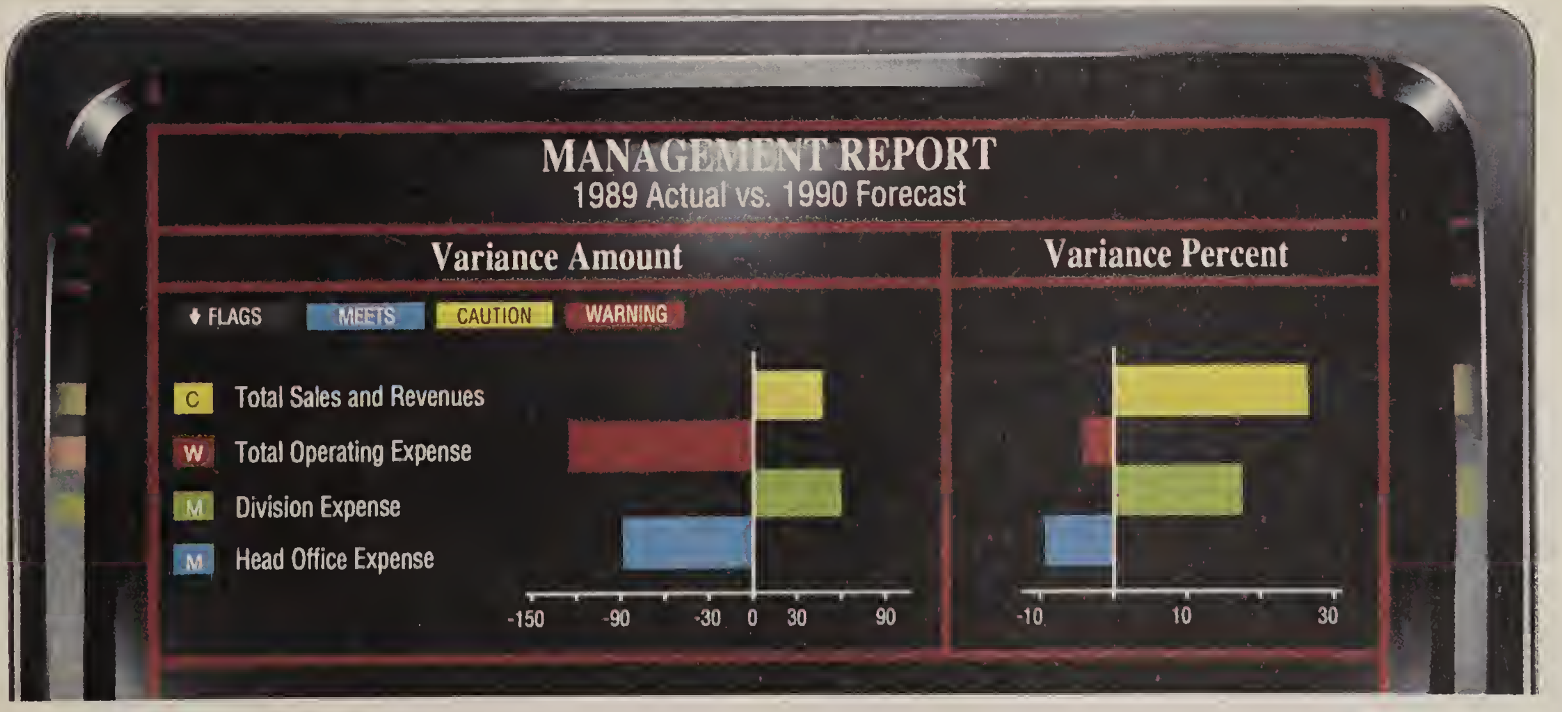

Spreading the gospel of new technology

BY PATRICIA CINELLI

Timothy Tuff is not an information systems executive, but his struggle to sell the idea of technical innovation to management and workers at the various operating companies of Alcan Aluminum Corp. is a familiar one to information systems chiefs.

In 1985, when Tuff took charge as president of the $2 billion subsidiary of Alcan Aluminium Ltd., Alcan was floundering in a morass of problems. The aluminum industry was hip-deep in a depression, with commodity prices at an all-time low. Markets for the company's products were being claimed by foreign competition, and profits had plummeted 88%. Board members and managers had issued a mission statement for Alcan: Find new and broader uses for the metal. There was no question that innovation was needed. What was less clear, however, was where the ideas would come from and how new technologies and new processes could be integrated into old-line businesses.

The route that Tuff chose to take in pursuing change was to extend the existing course of the business and, to the extent possible, make workers the agents of change as well as the implementors.

"The key to innovation — and continued, sustained innovation — is to build on your strengths," Tuff explains. Tuff started by creating a business development office in Cambridge, Mass., a group consisting mainly of staff recruited from other parts of the business and whose goal is to seek out ideas for new technologies from within the organizational structure. Tuff's process calls for developing an atmosphere in which the work force can find methods of streamlining and fine-tuning existing functions.

LIGHT MECHANICS

Alcan Aluminum's Tuff

"The feeling that the rules and climate required to foster and run a new business [or technology] are quite different from those required to run an existing business is a very dangerous attitude," he says.

Tuff has proceeded slowly. Rather than issuing fiats, he prefers to win adherents to his philosophy that innovation is everyone's responsibility through salesmanship — inspirational videos, personal pilgrimages to plants and a policy of accessibility.

Thinking caps

Tuff says that the problem in many companies is that good ideas do not surface, and nothing is done about them when they do. "A person's first idea is not always his best, but with feedback, ideas can become more targeted," he says.

What happens when an employee comes up with an idea? Tuff answers quickly. "He picks up a phone and calls me. I return every single call from an employee." However, he says, he is not bombarded with calls from the 6,300 Alcan employees. "Once encouragement is exhibited, people flag up ideas to their managers."

Tuff's consensus-building has spurred about 1,600 ideas, 10% of which have been further analyzed by specially formed project teams. So far, about 350 people from the Alcan line organization have participated and 37 new aluminum-related businesses have been started.

At this point, most ideas still come out of the Cambridge office. And some never make it farther than that. For example, one Alcan subsidiary, Algoods Aluminum in Toronto, let Tuff's group present more than a dozen new product and technology ideas before agreeing to try one — the manufacture of aluminum shelters, for which the plant installed a new thermal system. As an independent business unit, Algoods is not required to accept Tuff's proposals but encouraged to generate its own as well.

The goal of having the majority of ideas spawned by the individual businesses is still just that — a goal. But Tuff remains convinced that innovation should be a grass-roots process.

"The best ideas are those generated in a unit [and then] analyzed and implemented in that same unit," Tuff explains, "because that shows me that the process is working." •

Cinelli is a free-lance writer based in Washington, D.C.

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F1

INTERVIEW

Breaking the mental blocks

Business managers can't consider what they don't know is possible, says Index Group's Steven Stanton

Steven Stanton does not like to hear the word support applied to information systems executives, even when it is used in the active sense. Stanton, a principal at Index Group, Inc., a Cambridge, Mass.-based research and consulting organization, says that in these times, IS executives should be thinking in terms of leading the direction of business strategy, even if that leading has to be done behind the scenes. In a recent conversation with Features Editor Joanne Kelleher, Stanton discussed how information systems can help companies see what technology can do for them.

What possibilities do you see for IS organizations to help firms make critical business adjustments?
There are at least two areas where, over time, they can take a leadership role. The first involves using their unique perspective to see potential for linking different parts of the company in different ways. Because many IS organizations serve a number of business units, they are one of the few parts of larger organizations that get to see the entire enterprise or a large chunk of it. Because they have more of a forest than trees perspective, they often have some very innovative ideas about doing things differently, especially in terms of changing boundaries along business or functional lines.

The other opportunity is that they also have deep and significant knowledge of the rapidly evolving capabilities of information technology. No one else in the organization may understand so much about what is possible or be so well positioned to translate that knowledge into business functionality.

What kind of role do you see emerging from these opportunities?
Part of the role will be to help the users understand what is going to be possible with technology and how those capabilities relate to the important things they have to do to succeed in their business. That last part is the really critical one: Not just understanding the technology but pushing it further in a context that will help businesspeople understand how new capabilities will influence the way that business is conducted.

Every business strategy has some implicit information technology dimension. However, for a lot of organizations, that information technology dimension revolves around old assumptions. A lot of those assumptions are implicit constraints on what a company can do that haven't been dredged up and looked at in a while and kind of get fossilized as "the way we do business."

What can IS do to expose and change these assumptions?
Well, I think the first onus is a lot of education. Some group of people, including the IS organization, needs to get senior managers more aware and more thoughtful about the realm of potential choices they have around information technology. In the past, companies have in a sense outsourced their thinking about computers to IS. Part of what IS has to do now is to break that paradigm and say, "It is everybody's job to think about information technology."

And part of the task is to get business managers to identify what they assume are the basic boundaries of possibility?
Yes. Part of taking a fresh look at technology is what we call "surfacing fundamental assumptions." You have to bring those up and take a good hard look at them in light of what's possible today and in the future — and then really reassess what you want to do.

Can you provide an example of how that process works?
We did some work with a large energy company that sells motor oil that you put in cars. Ten years ago, the company decided that it was too complicated to sell partial truckloads of motor oil direct to gas stations — the logistics and the paperwork were just too complicated and would cut into their profits. Instead, they began selling only to distributors, who would break down the cases and the truckloads and sell to retail gas stations. That had been a fundamental part of that company's strategy for 10 years, and no one had taken a look at it in light of modern logistics software, EDI and a host of other new technology advances. Everybody was going along with their blinders on about the technological ease with which that kind of detail now can be managed.

How difficult is it to surface outdated assumptions and get people to examine them? What kind of a task would IS execs be looking at?
It's not just IS executives. It could be other staff groups and it could be businesspeople operating by themselves. But the fact is, surfacing these assumptions and then, hopefully, shattering them or at least illuminating them is very hard work. Most people have a lot invested in their current view of the world and to get them to question some things in which they may have invested personal capital or business decisions is very tough. You don't want to make people feel foolish.

How radical a leap should this kind of process produce?
We think that technology-driven planning is really part of a larger process of taking a fresh look at how the business operates and trying to redesign it, leveraging the capabilities of information technology. And that is the real big game we look for. We aren't looking for minor adjustments. What we are looking for are the grand changes; to do some fundamental shifting of the way that companies work and the way they manage themselves.

But isn't it easier, maybe even better, to start with adjustments and work your way up to the grand changes?
I think the answer is very context-dependent. If a company is successful and has a legacy of winning in its market, it may be very difficult to convince anybody initially of the need to think about big changes. But if a company is feeling a lot of pain and is hemorrhaging money, it may not have the time to work on optimizing small parts of the organization.

We've all done a lot of talking about the necessity for IS executives to learn about the business. Is there a danger that in doing so they may absorb some of the same assumptions and inhibitions?
It is possible. Certainly, if you take a look at the history of innovation, a lot of unusual and new ideas come from outsiders; folks who aren't invested in the current way of looking at things. There is a way of possibly avoiding that trap, though, and that is for the IS manager or part of the IS organization to take on the role of chief change officer, which involves acting as a kind of sanctioned gadfly. In that role, they would never stop moving, never settle down on one particular perspective.

It is a rather difficult issue in many organizations to make sure that you are matching your pace of ideas and changing initiatives to that of the organization. Are there ways to nudge old-line organizations without creating animosity and resentment?
Of course, you need some good political skills. There are a lot of IS managers I know who have wonderful ideas for technology-driven business change, and the way that they get those ideas translated into reality is that they share them with business managers, who take credit for them. In a sense, they are silent partners or back-office operators for those ideas. ●

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A network security primer

OSI guidelines can help you plan and build more secure systems

BY WILLIAM STALLINGS

Last week's conviction of Robert T. Morris, only days after a federal indictment of three former SRI International co-workers for breaking into government and Pacific Bell computers, undoubtedly rattled countless IS managers — with good reason. Incidents such as these are reminders that network security is far from a theoretical problem.

The introduction of distributed systems and use of networks and communications facilities for carrying data have increased the need for network security measures to protect data during its transmission. Are your networks secure?

To assess the security needs of an organization effectively and evaluate and choose various security products and policies, information systems managers need a systematic method of defining security requirements and solutions. This is difficult enough in a centralized data processing environment; local- and wide-area networks greatly compound the problem.

Fortunately, such an approach has been developed by the International Standards Organization (ISO) as part of its standard for an Open Systems Interconnect (OSI) communications architecture.

ROBERT PIZZO

The document, called "DIS 7498-2, OSI Reference Model Part 2: Security Architecture," can greatly help IS managers in several ways. The document provides a checklist of the most important network security features. The OSI security architecture can help managers organize the task of providing security while also providing immediate guidance to implementors and purchasers. Because the document does not dictate a specific implementation, vendors and customers are free to configure a set of services and mechanisms that meet their specific requirements. The scheme also is a way of standardizing security implementations.

The ISO standard serves two purposes: It provides a functional assignment of security features to OSI layers that will guide standards makers in future enhancements of OSI-based standards, and it provides a structured framework within which vendors and customers can assess security offerings.

The standard also defines the security services and mechanisms within the OSI framework. Services are optional but implemented in a particular OSI layer if used.

Because the architecture was developed as an international standard, computer and communications vendors will begin to develop security features for their products and services based on this structured definition of services and mechanisms.

Thus, in coming days, it will be increasingly important for IS managers to understand security from the perspective of the ISO standard. Three concepts anchor the OSI network security architecture:

- **Security threat:** Any action that compromises the security of information owned by an organization.
- **Security service:** This is a

Stallings is president of Comp-Comm Consulting in Prides Crossing, Mass., and author of 14 books on data communications.

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- **Networking increases risks**
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communications service that enhances the security of information systems and an organization's information transfer.

- **Security mechanism:** A communications mechanism that is designed to detect, prevent or recover from a security threat.

Threats to network security can be categorized as passive and active (see chart page 70). Passive threats include eavesdropping and monitoring transmissions to obtain information. Because they do not involve any alteration of data, passive threats are difficult to detect.

Such attacks can be prevented, however, so the emphasis should be on prevention.

Active threats involve some modification of data or the creation of a false stream. Preventing active attacks is very difficult because it requires continuous physical protection of all communications facilities and paths. A better goal is to quickly detect and recover from any disruption or delays caused by the attack.

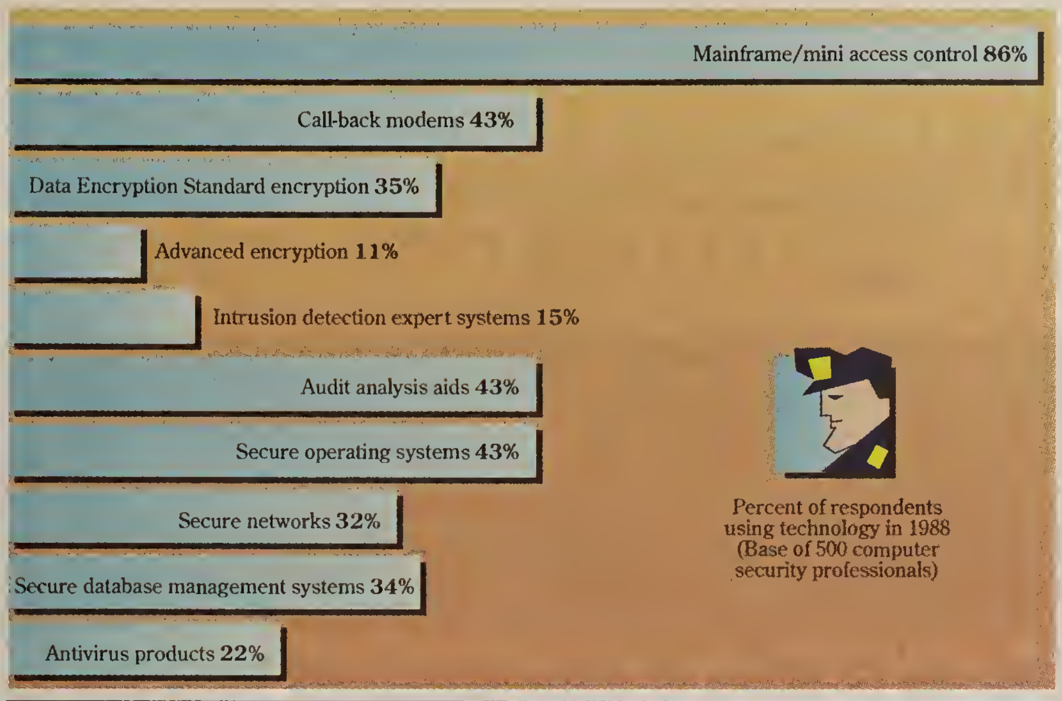
Attacks can occur at any communications link: cable, microwave links or satellite channels. Active attackers need to gain physical control of a portion of the link so that they can insert and capture transmissions. A passive attacker needs only to observe transmissions.

Twisted-pair and coaxial cable can be attacked using either invasive taps or inductive devices that monitor electromagnetic emanation. Invasive taps allow both active and passive attacks, while inductive taps are useful for passive attacks. Neither type of tap is effective with optical fiber, which is one of the advantages of this medium. The fiber does not generate electromagnetic emanations and hence is not vulnerable to inductive taps. Physically breaking the cable seriously degrades signal quality and is therefore detectable.

Microwave and satellite transmissions can be intercepted with little risk to the attacker. This is especially true of satellite transmissions, which cover a broad geographic area. Active attacks on microwave and satellite are also possible, although this is more technically difficult and can be quite expensive.

> BY FAR, the most important automated tool for ensuring network and communications security is encryption.

Processors along the communications path are also subject to attacks. These might be attempts to modify hardware or software, gain access to processor memory or monitor electromagnetic emanations.



Safe and sound

Mainframe/minicomputer access control outpaces other security technologies

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Solutions

By far, the most important automated tool for ensuring network and communications security is encryption. Encryption is a process that conceals meaning by changing intelligible messages into unintelligible messages. Encryption is accomplished by using a code or a cipher.

A code system employs a predefined table or dictionary to substitute a meaningless word or phrase for each message or part of a message. A cipher uses a computable algorithm that can translate any stream of message bits into an unintelligible cryptogram. Cipher techniques are more readily automated and thus are more popular in computer and network security facilities.

Conventional encryption is the process in which the original intelligible message, referred to as plaintext, is converted into apparently random nonsense, called ciphertext, using an algorithm and a key. The key is a relatively short bit string that controls the algorithm. The algorithm will produce a different output depending on the specific key being used at the time. Changing the key radically changes the output of the algorithm.

Once the ciphertext is produced, it is transmitted. Upon reception, the ciphertext can be transformed back to the original plaintext by using a decryption algorithm and the same key that was used for encryption. The encryption algorithm must be powerful enough so that it is impractical to decrypt a message on the basis of the ciphertext alone. In other words, the algorithm needn't be kept secret but the key must.

This feature makes the technique feasible for widespread use and has allowed manufacturers to develop low-cost chip implementations of data encryption algorithms. With the use of conventional encryption, the principal security problem is maintaining the secrecy of the key.

If encryption is used, managers need to decide what to encrypt and where the encryption gear should be located. In most cases, there are two fundamental alternatives: link encryption and end-to-end encryption.

With link encryption, each vulnerable communications link is equipped on both ends with an encryption device, securing all traffic over all communications links. However, the message is vulnerable at each switch. Users of a public packet-switching network have no control over node security.

With end-to-end encryption, this process is carried out at the two end systems. A source host or terminal encrypts the data, which is then transmitted in an unaltered state across the network. A destination terminal or host then decrypts the data by using a shared key. Although this approach would seem to secure the transmission against attacks on the network links or switches, there is still a weak spot. User data is secure but the traffic pattern is not, because packet headers are transmitted in the clear. To achieve greater security, both link and end-to-end encryption are needed.

When both forms of encryption are employed, the host encrypts the user-data portion of a packet using an end-to-end encryption key. The entire packet is then encrypted using a link encryption key. As the packet traverses the network, each switch decrypts the packet using a link encryption key. This permits reading of the header. It then encrypts the entire packet again for transmission, sending it to the next link. Now the entire packet is secure, except for the time that the packet is actually in the memory of a packet switch, at which time the packet header is in the clear.

For conventional encryption to work, the two parties to an exchange must have the same key, and that key must be protected from access by others. Frequent key changes limit the amount of data compromised if an attacker learns the key.

Public-key encryption

Securely distributing keys is a major difficulty of conventional encryption. A clever way around this requirement is public-key encryption.

For conventional schemes, encryption and decryption keys are the same. Public-key encryption solves the distribution problem, because there are no keys to distribute. All participants have access to public keys, and private keys are generated locally by each participant and, therefore, need never be distributed. As long as a system controls its private key, its incoming communication is secure.

At any time, a system can change its private key and publish the companion public key to replace its old public key.

A main disadvantage of public-key encryption is that its algorithms are very complex. So, for comparable size and cost of hardware, the public-key scheme will provide much lower throughput.

One possible application of public-key encryption is to use it for the permanent key portion, with conventional encryption keys used for session keys. Because there are few control messages relative to the amount of user data traffic, the reduced

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throughput should not be a handicap.

Users concerned about security from traffic analysis can effectively use link encryption. In this approach, packet headers are encrypted, which reduces the opportunity for traffic analysis.

It is still possible, however, for an attacker to assess the network traffic volume and observe the amount of traffic entering and leaving each end system. An effective countermeasure to this attack is the use of traffic padding.

- Traffic padding. This is a function that generates a continuous stream of random data or ciphertext. This makes it impossible for an attacker to distinguish between true data flow and noise; therefore, it is impossible to deduce the amount of traffic.
- Message authentication. This is a procedure that lets communicating parties verify that received messages are authentic. This ensures that contents have not been altered and that the source is authentic.

A common method of message authentication involves the use of a message authentication code. Data plus the code are transmitted to the intended recipient.

The recipient performs the same calculation on the data, using the same secret key, to generate a new message authentication code. The received code is then compared with the calculated code.

Several algorithms can be used to generate the code. The National Bureau of Standards, in

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In addition to the mechanisms related to specific services, there are five referred to by the ISO as pervasive security mechanisms. These are not explicitly related to any service and are not assigned to any particular layer of the OSI model.

- Trusted functionality. This technology can be used to extend the scope or effectiveness of other security mechanisms. Any functionality that directly provides, or provides access to, security mechanisms should be trustworthy.
- Security labeling. This is used to indicate the classification level or sensitivity of the labeled data. A security label may also be additional data associated with the data transferred or may be implicit — that is, implied by the use of a specific key to encrypt data or implied by the context of the data such as the source or route.
- Event detection. Security-relevant event detection includes the detection of apparent violations of security and may also include detection of "normal" events — for example, a successful access or log-on.
- Security audit trail. This potentially permits detection and investigation of breaches of security by permitting a subsequent security audit.

A security audit is an independent review and examination of system records and activities in order to test for adequacy of system control, ensure compliance with established policy and operational procedures, aid in damage assessment and recommend any indicated changes in controls, policy or procedures.

- Security recovery. This category deals with requests from other mechanisms, such as event handling, and takes recovery actions as the result of applying a set of rules. These recovery actions may be immediate, temporary or long-term.

WILLIAM STALLINGS

PostScript® laser printers
used to be expensive, large and
shared by an entire office.

Until now.
microLaser
LETTER

microLaser™ from Texas Instruments: the affordable PostScript printer users can call their own.

Finally, for less than $3,000 users can have a PostScript laser printer right at their desks. TI introduces its new microLaser, with the features users want — now and in the future.

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At only 13.4 inches wide and 14.2 inches deep, microLaser may be the small kid on the block, but it packs plenty of punch. This printer takes full advantage of powerful PC software. That's because it uses the Adobe® PostScript printer language and is compatible with the HP LaserJet® Series II — allowing the user to switch between them easily. With that kind of flexibility, the six-page-per-minute microLaser is ideal for word processing, spreadsheet and desktop publishing applications.

Because microLaser features the PostScript language, it prints fonts in a variety of type styles and sizes. Plus, it can print them tall-ways, long-ways, all kinds of ways. It even prints complex pages of integrated text and graphics.

Capabilities that grow as their needs grow.

One of the best things about microLaser is that users only buy what they need. So if they're not ready for PostScript language, they can buy the standard microLaser for less than $2,000 and add PostScript software and other powerful features later.

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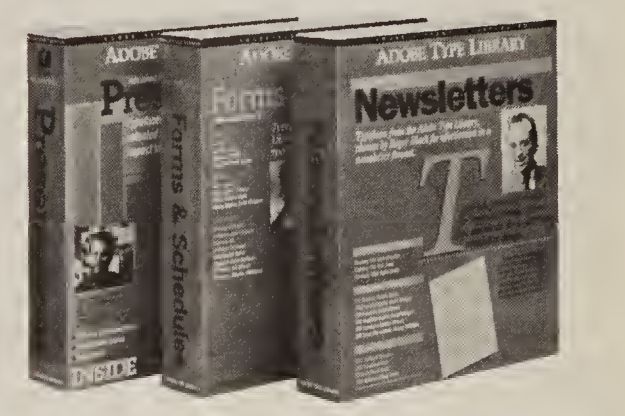

FREE! Adobe typefaces from TI.

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POSTSCRIPT™

The printer also handles a variety of paper sizes and types — from letter, legal and executive to transparencies, labels and envelopes. For those times when users face a large mail merge task, they can just plug in an optional envelope feeder to easily alternate between letters and envelopes.

The affordable PostScript printer is a call away.

To find out more about how your users can have affordable PostScript printing right at their desks, call TI today.
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TEXAS INSTRUMENTS

©1989 TI 62128
Standard microLaser is HP LaserJet II-compatible, prints six pages per minute and comes with a .5 Mb of RAM. microLaser PS has the same features as the standard microLaser, plus an Adobe PostScript interpreter with 35 typefaces and an extra 1 Mb of RAM. microLaser is a trademark of Texas Instruments. Adobe, PostScript and the PostScript Logo are registered trademarks of Adobe Systems, Inc. LaserJet is a registered trademark of Hewlett Packard, Inc. AppleTalk and Macintosh are registered trademarks of Apple Computer, Inc.

its publication "DES Modes of Operation," recommends the use of the Data Encryption Standard (DES) algorithm. The DES algorithm is used to generate an encrypted version of the message, and the last number of bits of ciphertext are used as the code. A 16- or 32-bit code is typical.

The most common practical use of authentication has been for financial messages, such as payments. For example, the Society for Worldwide Interbank Financial Telecommunications uses an authentication function.

It is possible to perform authentication simply by the use of conventional encryption. If we assume that only the sender and receiver share a key, then only the genuine sender would be able to encrypt a message successfully for the receiver. Furthermore, if the message includes an error-detection code and a sequence number, the receiver is assured that no alterations have been made and that sequencing is proper.

Digital signature

Authentication protects two parties exchanging messages from any third party. However, it does not protect the two parties from each other. A solution to this problem is the digital signature.

The digital signature is analogous to a handwritten signature. It lets users verify the author, date and time of the signature and authenticate the contents at the time of the signature. The digital signature also can be verified by third parties to resolve disputes.

Administrative controls that boost the security of private keys can be employed with some success, but the problems can be circumvented using an arbitrated signature scheme.

While there are a variety of approaches, most signature systems operate as follows: Every signed message from a sender S to a receiver R goes first to an arbitrator A, who subjects the message and its signature to a number of tests to check its origin and content.

The message is then dated and sent to R with an indication that it has been verified to the satisfaction of the arbitrator. The presence of A solves the problem faced by direct signature schemes that S might disown the message.

The arbitrator plays a sensitive and crucial role in this sort of scheme, and all parties must have a great deal of trust that the arbitration mechanism is working properly.

Digital signature schemes provide authentication plus the ability to resolve disputes between the communicating parties. While authentication is becoming popular, digital signatures are still rare. The principal reason is that the scheme is more complex and, therefore, more costly. Digital signature schemes require administrative control mechanisms or procedures. In some circumstances, only pure authentication is required.

Definitive service

The ISO defines a security service as a function provided by communicating systems to enhance the security of the systems and the data transfers taking place. These services are broken down into five categories: confidentiality, integrity, authentication, access control and nonrepudiation.

A security mechanism is any software or hardware means of implementing a security service (see chart this page).

- Confidentiality. This category of service protects transmitted data from passive attacks. Several levels guard against the release of message contents. The broadest service protects all user data transmitted between two users over a period of time.

A key aspect is the protection of traffic flow from analysis. This tries to prevent an attacker from observing the source and destination, frequency, length or other characteristics of the traffic on a communications facility.

Another mechanism that may be relevant to confidentiality is routing control. For sensitive data, routes can be chosen that will use only physically secure networks or links. For example, a user may employ both a private network and public telecommunications networks to interconnect offices. If the private network is equipped with an encryption mechanism, then all sensitive data should be routed through the private network only.

- Integrity. This service assures that messages are received as sent, with no duplication, insertion, modification, replays or destruction. As with confidentiality, integrity can apply to a stream of messages, a single message or selected fields within a message.

Integrity of selective fields or individual messages can be provided by an error-detecting code, such as that used on data link control protocols. If any of the fields in a data unit are altered, then an error will be detected, just as if a bit error had occurred in transmission. Of course, the attacker might alter part of the message, recalculate the error-detection code and alter that as well. To prevent this maneuver, the error-detecting code or the entire message can be encrypted.

To protect the integrity of a sequence of data units (that is, protecting against misordering, losing or replaying of messages), sequence numbers can be used. As with error-detecting codes, sequence numbers are already incorporated into protocols such as High-Level Data Link Control, X.25 and the ISO transport protocol. Again, to protect the sequence number itself from modification, it may be encrypted.

A final technique that has relevance for integrity of a single message or fields within a single message is the digital signature mechanism. If the digital signature includes the encipherment of an error-detecting code, then the signature detects modification of the contents of the message.

- Authentication. This service is concerned with ensuring that a communication is authentic. In the case of a single message, such as a warning or alarm signal, the authentication service guarantees that the message is from the source that it claims to be from.

In ongoing interaction, such as the connection of a terminal to a host, two aspects are involved. First, at the time of connection initiation, the service ensures that the two entities are authentic: that is, that each is the entity it claims to be. Second, the service must ensure that the connection is not interfered with in such a way that a third party can masquerade as one of the two legitimate parties for the purposes of unauthorized transmission or reception.

Again, encryption is a key mechanism used for this service. If two parties and two parties alone share the information needed for mutual exchange of encrypted data, then no third party can claim a false identity. A more explicit technique is the digital signature technique. In effect, a sender must "sign" the message in such a way that the signature can be authenticated.

Other mechanisms relevant to authentication are the ISO's authentication exchange mechanisms. These include the use of passwords or other means of identifying a user and the exchange of acknowledgment signals. Also included in this category is the use of an encrypted message authentication code.

- Nonrepudiation. In network security, access control limits and controls the access to host systems and applications via communications links. To achieve this, each entity trying to gain access must first be identified, or authenticated, so that access rights can be tailored to the individual.

The nonrepudiation service prevents either sender or receiver from denying a transmitted message. The principal mechanism for this service is the digital signature, which involves the use of a private key applied to a portion of the data. To prevent the repudiation of the contents of a message, rather than the message itself, data integrity mechanisms, such as encrypting an error-detecting code, are used as part of the digital signature. Finally, third-party notarization may enhance the nonrepudiation service. ●

Potential network security threats

Prevention is the key to fighting passive threats; for active threats, quick detection and recovery are crucial

Passive threats:
Monitoring and/or recording data while data is being transmitted over a communications facility

- **Release of message contents**
  Attacker can read user data in messages.
- **Traffic analysis**
  Attacker can read user packet headers to determine location and identity of communicating hosts. Attacker can also observe length and frequency of messages.

Active threats:
Unauthorized use of a device attached to a communications facility to alter transmitting data or control signals or generate spurious data or control signals

- **Denial of message service**
  Attacker can destroy or delay most or all messages.
- **Masquerade**
  Attacker can pose as real host or switch and communicate with another host or switch to acquire data or services.
- **Message stream modification**
  Attacker can selectively modify, delete, delay, reorder and duplicate real messages. Attacker can also insert counterfeit messages.

SOURCE: COMP-COMM CONSULTING

CW CHART: TOM MONAHAN

Security services and mechanisms

Using OSI specs, vendors and customers can configure a set of services and mechanisms to their needs

Services	Mechanisms							
	Encryption	Digital signature	Access control	Data integrity	Authentication exchange	Traffic padding	Routing control	Notarization
Confidentiality								
Selective field confidentiality	🔴	●	●	●	●	●	●	●
Connectionless confidentiality	🔴	●	●	●	●	●	🔴	●
Connection confidentiality	🔴	●	●	●	●	●	🔴	●
Traffic flow confidentiality	🔴	●	●	●	●	🔴	🔴	●
Integrity								
Selective field connectionless integrity	🔴	🔴	●	🔴	●	●	●	●
Connectionless integrity	🔴	🔴	●	🔴	●	●	●	●
Selective field connection integrity	🔴	●	●	🔴	●	●	●	●
Connection integrity with recovery	🔴	●	●	🔴	●	●	●	●
Connection integrity without recovery	🔴	●	●	🔴	●	●	●	●
Authentication								
Peer entity authentication	🔴	🔴	●	●	🔴	●	●	●
Data origin authentication	🔴	🔴	●	●	●	●	●	●
Access control	●	●	🔴	●	●	●	●	●
Nonrepudiation								
Nonrepudiation, origin	●	🔴	●	🔴	●	●	●	🔴
Nonrepudiation, destination	●	🔴	●	🔴	●	●	●	🔴

🔴 Considered appropriate ● Not considered appropriate

SOURCE: COMP-COMM CONSULTING

CW CHART: TOM MONAHAN

INDUSTRY INSIGHT

Nell Margolis

Mistaken identity

It ain't me, babe — no, no, no, it ain't me . . .

Bob Dylan, 1964
Don Murphy, 1990

Until the piano fell on his head, it was a pretty good week for Don Murphy.

And why not? The family was fine, the weather was Californian and the IBM systems software sales and marketing consultancy that Murphy cofounded three years ago was beginning to really take off.

And then came the phone calls that made Murphy feel like the proverbial blameless (luckless) guy who just happens to be walking below the window when a piano hoist rope is fraying toward it's end.

Or whatever happens to be your cliche of choice to describe what happens when someone who has provided for every foreseeable contingency gets hit with a contingency that no one could have foreseen.

For Murphy, the catch-

Continued on page 75

Out of the frying pan and into the industry

BY RICHARD PASTORE
CW STAFF

Curt Monash, the controversial, high-profile former Paine Webber, Inc. software industry analyst, has resurfaced as a hopeful industry leader rather than a follower. Monash has leveraged his software contacts and insight to help found local-area network reseller Evernet Systems, Inc., which formally debuted earlier this month.

Evernet is tackling the underexploited, national, value-added LAN services market by acquiring local operations and building what its founders term a "connectivity super-VAR." Monash wrote the business plan, contributed to the concept and helped search for venture backing.

Monash, now 30, won a reputation on Wall Street as an enfant terrible by being among the first to spot the potential in, for instance, an up-and-coming Lotus Development Corp. However, his bulldog tactics and acerbic opinions raised the hackles of such industry figures as John Cullinane, chief executive officer of the former Cullinet Software, Inc.

Once, when Monash defied orders to stay away from a Cullinet press conference, Cullinane had him dragged bodily out of the building.

"As an analyst, I was supposed to play a confrontational role," Monash said. Now, as sole proprietor of his Manhattan-based New World Ventures, "I have to redirect myself toward helping companies."

JOHN MARTINI

New World Ventures' Monash: *"I am who I am."*

Even at Paine Webber, Monash's goal was to be a computer industry mover and shaker. "I wanted to help the people with bright ideas and valuable skills live up to their potential and make real companies," he said.

In 1987, when Paine Webber

Continued on page 75

New leadership revamps Leading Edge

ANALYSIS

BY ALAN J. RYAN
CW STAFF

CANTON, Mass. — Nearly a year ago, the fate of Leading Edge Products, Inc. was up in the air. Its founder had bailed out amid a wave of legal battles, dealers were clamoring about money paid for products never received, and the PC clone-maker was about to file for Chapter 11 bankruptcy protection.

Earlier this month, Leading Edge announced it has firmly hit the ground again with a renewed financial commitment from its zealous savior and the confirmation of promises made last fall.

The $300 million Daewoo Telecom Co., which acquired Leading Edge last fall in a court-approved reorganization plan, said it will double its initial $40 million to $50 million investment during the next 12 months. Further, Leading Edge has new top management working on distribution agreements and a product line that will move it into areas such as engineering workstations and Unix hardware.

Agbay to lead

In the first wave of new management, Albert J. Agbay, 41, a five-year veteran of marketing at Panasonic recently joined Leading Edge officially as president and chief executive officer. The Leading Edge headquarters will be moved from Canton to Westboro, Mass., and within the next 30 days, Agbay said he will have completed the rebuilding of the company's executive management and marketing staff.

Leading Edge's current personal computer-dominated product line will grow significantly over the next few months as well, Agbay said, concurring with the fall 1989 predictions of Dr. Sung Kyou Park, president of Daewoo Telecom.

If Park's predictions of multi-

Continued on page 75

Firms' earnings perform same old song and dance

BY NELL MARGOLIS
CW STAFF

Fourth-quarter earnings reports from computer companies last week continued to play variations on the well-known themes of torpor at the top, vitality in the niches and a chorus of "woe, woe, woe" from midrange systems vendors in the throes of costly repositionings.

Analysts totted up additional evidence to support their ongoing upbeat projections for the online transaction processing (OLTP) market, estimated at $30 billion and growing: **Sequent Computer Corp.** logged triple-digit fourth-quarter earnings growth on a 98% revenue boost, and **Stratus Computer, Inc.** announced net income up 11% on revenue up 24% compared with last year's comparable quarter. OLTP titan **Tandem Computers, Inc.**'s revenue came in slightly below some Street expectations, and fourth-quarter profits suffered a tad in the year-to-year comparison; nevertheless, said Hambrecht & Quist, Inc. analyst J. Neal Weintraut, the company's quarterly report "gave a number of very affirmative signs," prominently including stronger-than-expected gross margins, a slew of major sales to worldwide players and a rapid takeoff in the newly released Cyclone line.

With large corporate customers clamoring for more information sooner, Weintraut said, "the computer environment of the '90s is an OLTP environment — and Tandem is very well positioned against entrenched players like IBM and DEC."

Teradata's client/server database strategy continued to power the database maker — showcased in an *Inc.* magazine annual survey as 1989's fastest-growing small company — beyond small-company status. Among other firms pushing the small-firm envelope, executive information software vendor **Comshare, Inc.** reported revenue up 14% over last year's fourth quarter, to $27.4 million, as well as a net income leap of 43% to $2.7 million, and **BMC Software, Inc.**'s strong sales handed the Sugar Land, Texas-based IBM systems software provider profits of $5.6 million on fourth-quarter revenue of $24.9 million — increases of 50% and 55%, respectively.

On the larger but sadder side, **Cray Research, Inc.** fingered product transition and development costs as the leading cause of its 40.7% slide in net income. **Wang Laboratories, Inc.** showed a 7% increase in revenue but reported an anticipated net loss of $10.5 million for the quarter — a steep drop from the $1 million profit netted in last year's comparable quarter, but a quantum comeback from the $62 million worth of red ink in the immediately preceding quarter.

Wang President Richard Miller touted the success of the company's restructuring, noting particularly that a once-staggering bank debt load is down $267 million to an estimated $308 million. "With another $250 [million] to $350 million in cash expected from additional asset sales during the next few months," Miller said in a prepared statement, "the bank debt could be totally paid off."

Computer Associates, Inc. enjoyed a 16% profit rise but watched revenue slip 4% to $344.1 million as it struggled to digest Cullinet Software, Inc., acquired in late September.

1989 fourth-quarter earnings

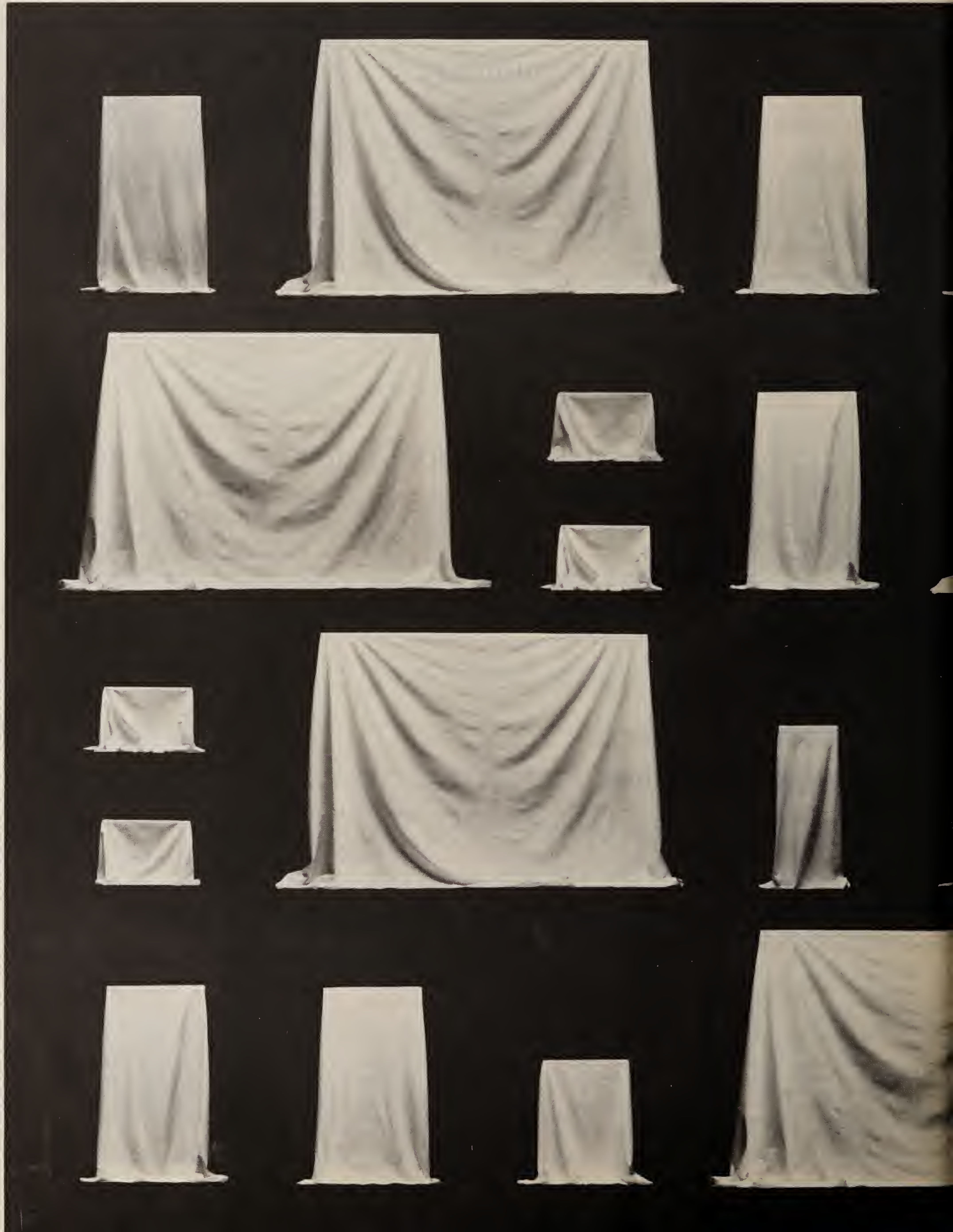
Large firms pulled in pretty much what was expected of them

Company	Revenue Oct. through Dec. (in millions)	Percent change from 1988	Net income Oct. through Dec. (in millions)	Percent change from 1988
Lotus Development Corp.	$150	33%	$29.4	227%
Amdahl Corp.[1]	$625.9	15%	$41.6	(42%)*
Cray Research, Inc.	$330.1	(23%)	$52.5	(40.7%)
Computer Associates [2]	$347.1	(4%)	$70.5	16%
Wang Laboratories	$637.7	7%	($10.5)	—
Sun Microsystems, Inc.	$594	10%	$20.2	(32%)

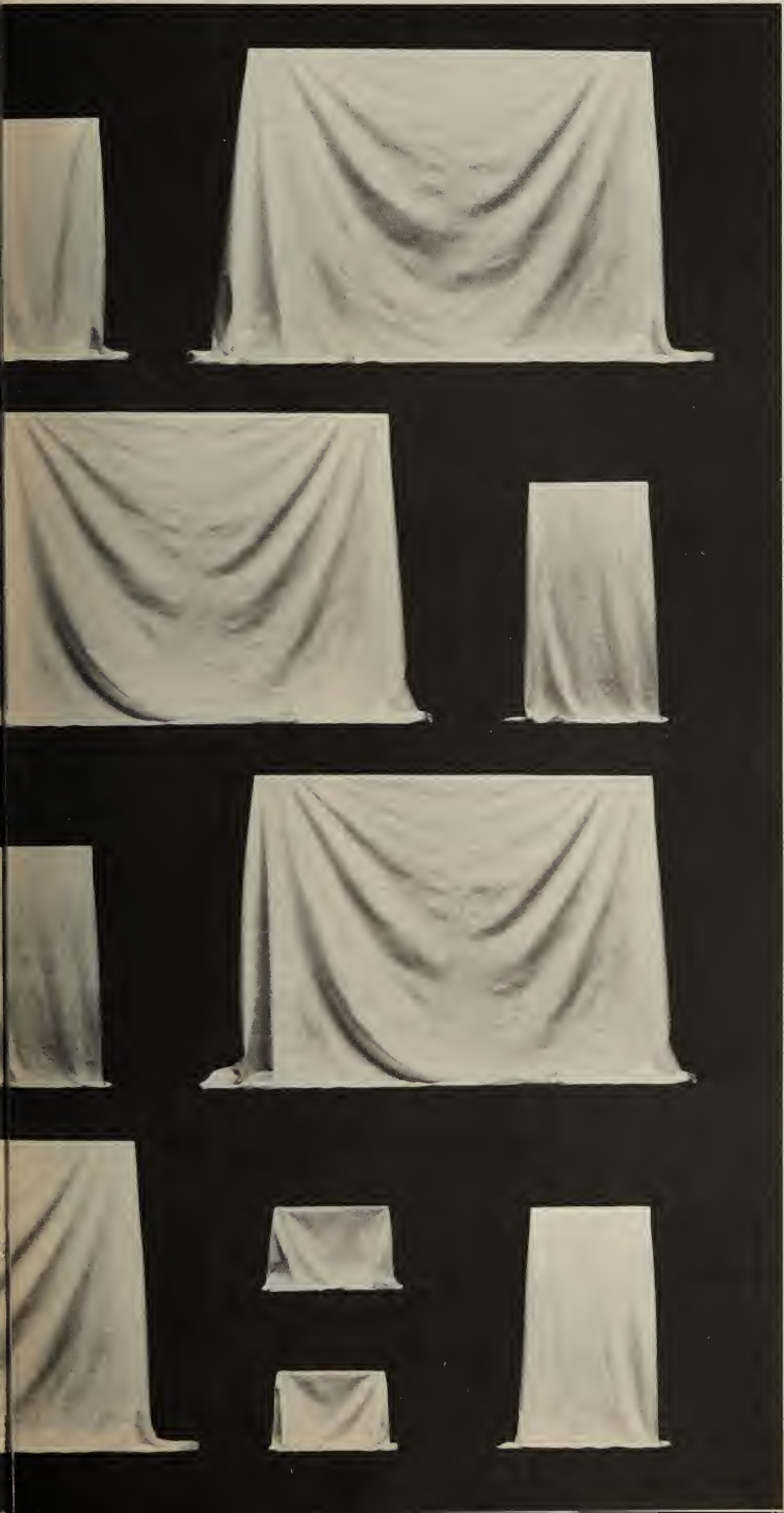
* Parentheses indicate a reduction
[1] Fourth-quarter net income includes an extraordinary tax credit
[2] Results reflect the September 1989 acquisition of Cullinet Software, Inc.

CW CHART: JOHN YORK

If IBM and DEC had their way, you'd



never see our 24 new computers.



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TOPS spin-off halts sales talk

BY JAMES DALY
CW STAFF

ALAMEDA, Calif. — Sun Microsystems, Inc.'s TOPS networking division was spun off into a wholly owned subsidiary earlier this month, temporarily deadening long-standing rumors that TOPS would be sold off by Sun.

At a press conference announcing a series of new products, TOPS Vice-President and general manager Rich Shapero said that TOPS, will become an independent corporation within Sun, with its own board consisting of representatives from TOPS, Sun and outside sources. The TOPS division sells networking software based on Ethernet, Token-Ring or Oracletalk into personal computer and Apple Computer, Inc. Macintosh environments.

Shapero said the move was made to increase the growth at TOPS but conceded that the two organizations are fundamentally different.

"We're primarily a software company; Sun is hardware," said Shapero, who will become president and chief executive officer of the organization.

TOPS, then known as Centram Systems West, was acquired by Sun for $20 million in April 1987, which scooped the company away from a circling 3Com Corp. Sun saw TOPS as both a means to extend its Unix connectivity down into the PC and Macintosh worlds and a natural complement to its Network File System.

But after Sun was tagged by a quarterly loss in the middle of last year, it reportedly began fishing for buyers of TOPS. Insiders report, however, that Sun was unhappy with the bids that came in and decided to keep the firm for now.

TOPS also announced two new software packages for electronic mail and file-sharing. Network Bundle for DOS is aimed at gaining inroads with users of IBM-compatible computers and will be available in mid-February for $249. Network Bundle for Macintosh, for Apple users, is available now for $299.

IN BRIEF

How to make a bad situation worse

When large chunks of **AT&T**'s long-distance network mysteriously went off-line this month, AT&T could have scored a public relations coup by directing frustrated callers to alternative long-distance services. Instead, the telecommunications monolith explictly told its operators not to tell callers how to place their calls through competitors. **U.S. Sprint Communications Co.** and **MCI Communications Corp.** are reportedly looking to capitalize on AT&T's misfortune with a barrage of hard-hitting ads.

. . . .

Relational consultation

Relational database maker **Sybase, Inc.** is about to acquire **D&N Systems, Inc.**, a consultancy in Burlington, Mass. The Sybase unit will operate under the name SQL Solutions, Inc. and act as an autonomous subdivision. D&N President Robert Davoli will report to Sybase Chief Executive Officer Mark Hoffman.

. . . .

Earth to alloy

With the acquisition of Fountain Valley, Calif.-based diskless workstation maker **Earth Computer Technologies**, Marlboro, Mass.-based microcomputer networking products vendor **Alloy Computer Products, Inc.** planted its flag in what market research analysts estimate as a $166 million market with 33% compound annual growth potential.

. . . .

The ultimate acquisition

Systems supplier The Ultimate Corp. last week announced its acquisition of Hands-On Learning Corp., specialists in Unix, X Window System and C programming language training. Ultimate is looking to its new division to extend the Unix and Pick training provided through its Ultimate University.

. . . .

Who needs tech execs?

Not as many companies as did before, according to a recent report issued by management search firm Korn/Ferry International. The report showed that of overall demand for senior executives in the fourth quarter of 1989, a mere 8% was concentrated in the technology industry — a steep fall-off from 14% reported by Korn/Ferry in its report for the fourth quarter of 1988. Overcapacity, price erosion, diminished capital spending and less defense money, a Korn/Ferry executive said, are making pickings slimmer for job-hunting bosses.

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Margolis

CONTINUED FROM PAGE 71

phrase could become "*Computerworld* article" — for it was after an article on the demise of a software firm called Optima Development, Inc. [CW, Jan. 15] that the phones at Murphy's firm began to ring off the hook with friends and — aaaargggghhh, *customers* — asking the entrepreneur why he went out of business without telling them.

He didn't. What he did do was name his company Optima Software, Inc. Since most people factor those little modifiers out of corporate names anyway, that meant a lot of folks walking around saying "Optima's out of business" without asking, "Which Optima?"

Not mine, is the message Murphy would like to get out. Right now, he's sitting in Sacramento, hoping the world will call. "Our big fear," he said, "is the customers who *aren't* calling."

Ironically, he said last week, he's been on guard against troubles from Optima Development for years. What he had in mind, however, was more along legal lines. Probably because legal trouble was the kind he says Optima Development threatened him with when they found out he was using their name.

Now, there's a point. Why did he choose a name so confusable with that of another firm, you might ask. I did.

He didn't, Murphy said, *they* did. Back when Optima the Ex talked about coming after Optima the Extant with cease and desist orders, Murphy said, he researched both corporate names and established that he filed first. Proof of that point could have forestalled the kind of problem Murphy was expecting, but it did diddly squat against the problem he got.

"Now, the irony is, I see the name everywhere I look." So far, he said, he has spotted it on a hand dryer at the airport, on an aquarium pump at his doctor's office and on one of his credit cards. And, on a now defunct corporation.

So, attention out there: If you think you know a company called Optima Software, Inc. in Sacramento, Calif., you did, and you do; it's alive and well. And if your name is Robert Morris, but the only virus you know about is the one you still can't shake off from last month, call Don Murphy; you've got a lot to talk about.

Margolis is *Computerworld's* senior editor, industry.

Leading Edge

CONTINUED FROM PAGE 71

declined to satisfy Monash's conditions for staying, he was effectively fired after seven years with the firm. "They weren't interested in having me do the job I wanted to do; they felt it didn't fit their strategy," Monash said. "We decided we'd all be happier if we parted ways."

But Monash's Evernet experience perhaps proves that a leopard cannot change its spots after all. Though they credited Monash's sharp mind and industry acumen, his Evernet collaborators said he was not the easiest person to work with.

"Curt comes to conclusions rapidly, and he can be impatient waiting for other people to see his point of view," said Michael Smith, vice-president of marketing and development at Evernet.

Evernet President and chief collaborator Norman Block called Monash a "very unusual man" and stated that he would not choose to work with him again.

For his part, Monash admitted, "I am who I am." He attributed the "falling out" with Block to a divergence of opinion over financial arrangements.

Monash is not letting any bad experiences deter him. He is already hatching his next venture, which he said will involve a company in the programmer productivity arena.

In retrospect, Monash is happy with his career change, though he admitted that "the actual deal process is somewhat tougher than I had anticipated." He still loves the industry: "It's dynamic, and it's bringing a lot of changes to the world."

Industry

CONTINUED FROM PAGE 71

tasking Unix-based systems, engineering workstations, laser printers, networking products and facsimile machines do come true, as Agbay announced last week, the company may actually be able to move beyond its former tarnished image.

The pre-Daewoo Leading Edge faced a lot of criticism for its handling of dealer programs during its heyday in 1987 and 1988.

In the programs, the dealers had to pay up front for the products they ordered, and then they had to contend with long backlogs and, sometimes, nondelivery of products. "The future of this company, our future product directions and the extent of our national distribution reach can in no way be predicted on the basis of this firm's past profile," Agbay said.

There will be no "automatic sanctity to any former Leading Edge traditions." In fact, one of the first things Daewoo did when it took over was to revise the dealer programs.

Agbay said that 100% of current U.S. revenue for Leading Edge comes from dealer-direct sales, and he is working toward some major distributor deals.

By the end of the year, 65% of the revenues are expected to be generated from sales to those distributors, according to Agbay.

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Breaking into the small time

Writing professional books calls for different tactics than best-sellers

BY JANET RUHL
SPECIAL TO CW

If you have been thinking about breaking into print with a book based on your experiences as an information systems professional and you have been reading how-to books about publishing, take what you read with a grain of salt.

The primary audience for the glossy magazines and books promising to show you how to make it big in publishing are beginners who fantasize about getting rich writing best-sellers. As a result, the contracts, advances and relationships with editors that these publications describe usually do not reflect the low-stakes world of business and professional books.

In contrast to a best-selling diet book that may sell millions of copies, a book on a subject of interest to IS managers is more likely to sell 3,000 to 20,000 copies, with the typical volume being about 5,000. Even IS classics written by well-known figures rarely sell more than 50,000 copies during their years in print. Those that sell in large numbers are generally the ones that are assigned as required texts in IS and computer science degree programs.

Books on IS themes are rarely sold in the chain stores you see in shopping malls. Instead, they are sold by mail order or through specialized book clubs.

All this means that you can expect to make a lot less money from a book written on a subject of interest to IS professionals than you would from one that would interest the population at large. Advances for a first time author of an IS book range from nothing at all to $5,000 — far from the $100,000 advances paid to celebrated authors.

In addition, publishers of business and professional books usually pay authors a royalty calculated on their net receipts — the price of the book less discounts — rather than a percentage of the cover price as described in how-to-get-published books. Discounts to booksellers of 28% to 58% are not unusual. A net royalty of 10% probably will earn you far less than a royalty of 7% of the cover price.

Long wait

Another fact to keep in mind is that the production cycle for business and professional books is a long one. After you turn over a completed manuscript to a publisher, it may take six to 18 months for your book to be printed, bound and shipped and an additional year for reviews to appear. This makes it essential for the topic to be compelling to readers two or three years after you begin working on it.

While people attempting to write big-money blockbusters usually need an agent to get their book in front of editors, the authors of business or professional books frequently find a publisher without one.

The secret is to identify the companies that already publish books on subjects of interest to your intended audience. Then address a query letter to the series editor or acquisitions editor at several of these publishing houses.

The best way to locate suitable publishers is to search through *Books in Print* in your local public library. Look up topics related to the one you will be covering and note which companies publish the books you see listed. John Wiley & Son, McGraw-Hill, Dow Jones-Erwin, Prentice Hall and Dorset House Publishing Co. are among the many publishers of books on IS topics.

You do not have to complete your book before your initial contact with a publisher. However, you must be prepared to show any publisher a proposal that consists of a cover letter, an outline and a sample chapter.

In this proposal, be sure to mention both your qualifications for covering your subject and the job experience you have had that might convince a potential buyer that you know what you are talking about. Make sure you explain to the publisher how your book compares with and improves on other books on your topic.

Finally, list the kinds of people you see as your primary audience and make it clear why they need your book badly enough to pay hard-earned money for it.

> YOU CAN EXPECT to make a lot less money from a book written on a subject of interest to IS professionals than you would from one that would interest the population at large.

No instant fame

Once your book comes out, do not expect to appear on television talk shows or participate in a whirlwind book tour. You will find that few local bookstores will be interested in arranging for book signings if your book is on an IS topic, even though you are a local author.

Your publisher is unlikely to spend much money on a publicity campaign. Also, unless you are very well known in the field, it is not likely to place expensive advertisements in professional publications. Therefore, it will be up to you to ensure that there is effective publicity.

Ask the publisher to send copies to people you think may be interested in reviewing your book in trade publications. Raise awareness of the book by writing opinion pieces and feature articles for some of the smaller, specialized publications read by IS professionals who work with hardware or applications that are similar to your own. Take advantage of all opportunities to address meetings likely to be attended by professionals who would be interested in your book.

If your book makes points that could be of interest to managers in fields outside of IS, try sending press releases on it to business feature editors of larger daily newspapers. In the releases, suggest ideas for feature articles loosely based on a situation your book discusses.

Ruhl is a consultant and programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals.*

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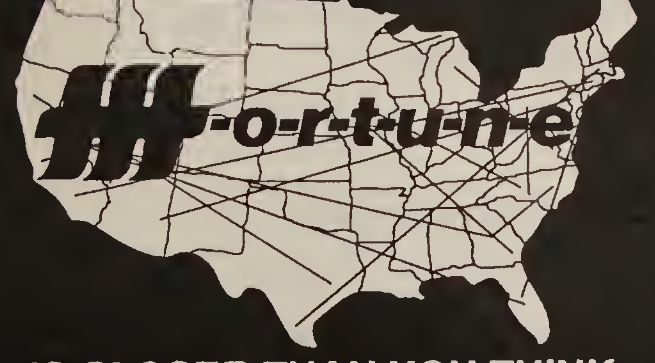

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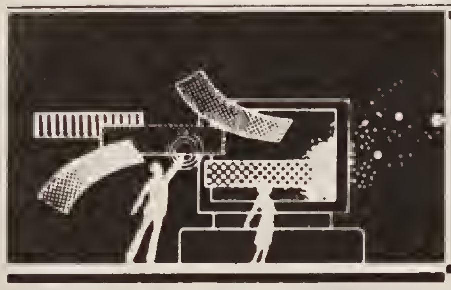

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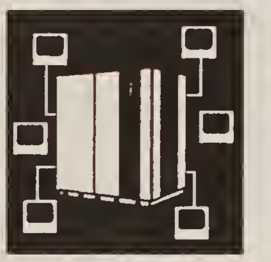

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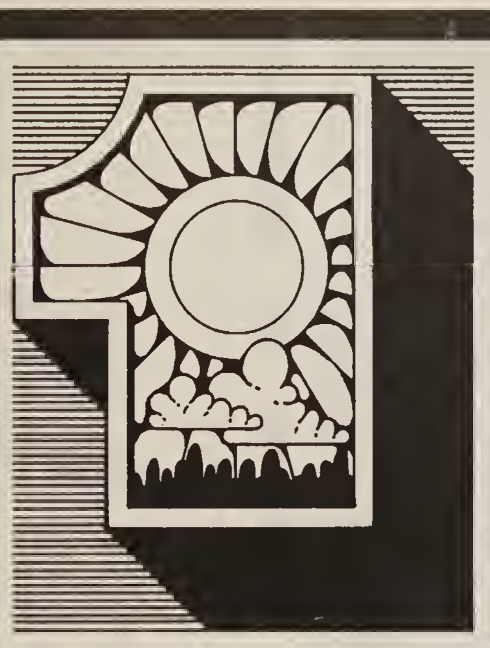

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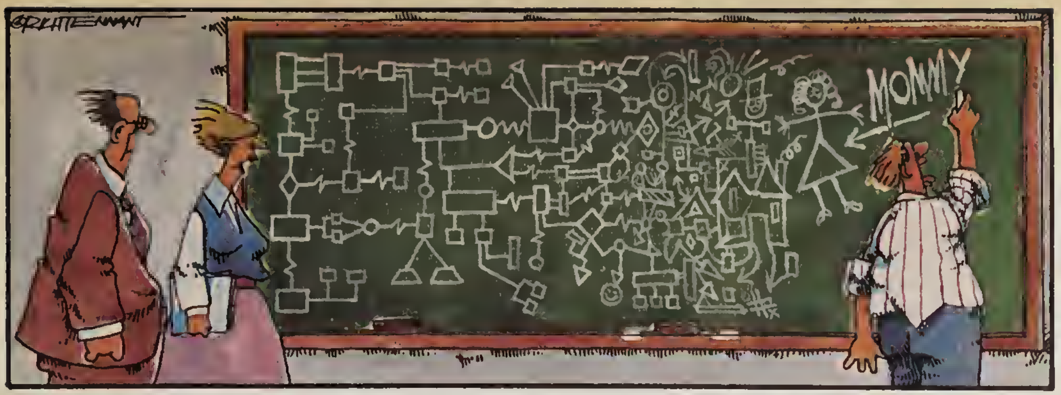

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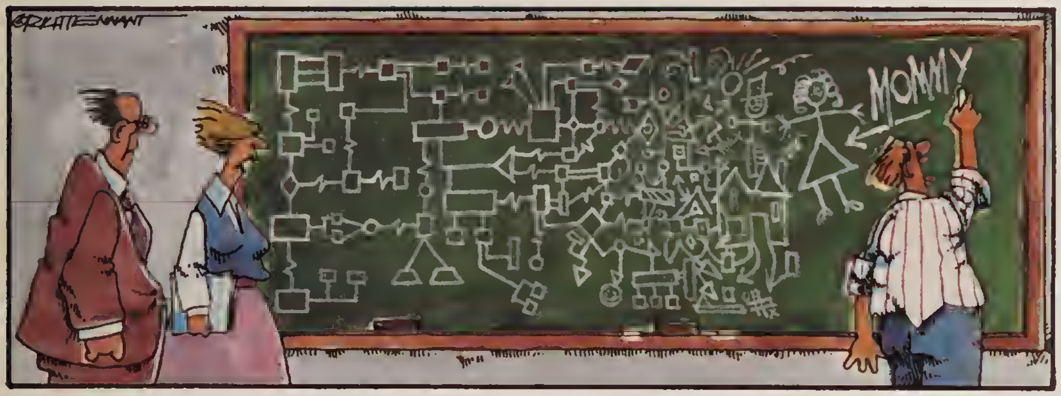

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MARKETPLACE

Selecting expert systems tools

Applying logic will enable you to choose the one that best suits your needs

BY JESSICA KEYES
SPECIAL TO CW

Eenie, meenie, miny, moe. With the proliferation of expert systems tools, one might be tempted to resort to creative techniques to select an appropriate one. Fear not, however; things are not as bewildering as they appear.

Since logic is supposedly the forte of information systems folks, let's apply a bit of it to the problem of choosing an expert systems tool. Logic dictates that we break the problem down into manageable components. We can divide our problem into three major questions:

- What expert systems features does the application require?
- What kind of database or file access does it require?
- Last but not least, do I need to network this application?

Expert systems are equal opportunity tools. As a group, they run on mainframes, minicomputers, workstations and personal computers. When selecting a platform, keep in mind the first law of IS: The difficulty of using a tool set increases with the size of the iron, so make sure you have sufficient experience with the platform you target.

With that principle in mind, the first step is to select the tool that best fits your application. Think in terms of checklists. Draw up lists of the items that your application must have, then find a tool that meets your minimum requirements.

A checklist approach

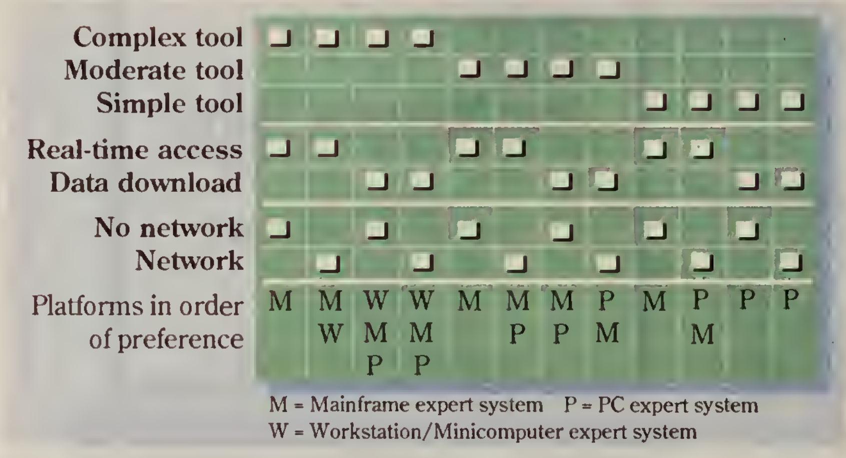
Developing a checklist of expert systems features requires some prior experience in expert systems methodology. You should come up with a list as part of the specification process. It may include things such as backward chaining, forward chaining, objects, diagnosis consultation paradigm, Help functions, explanation functions, interface to graphics and others.

The second checklist, of the minimally acceptable database linkages, is a lot less esoteric. At this point, you jot down things like, "I just have to have access to DB2, VSAM and sequential files." In addition to the need for database access, you want to analyze whether your application should have real-time data or whether you could live comfortably with data delivered on a time-delay basis.

Last but not least is the network checklist. What needs to be connected to what? Do you have the urge to run your system on a workstation or PC even though your corporate database is on a mainframe? The network question is the one fraught with the most difficulty. Although we have all been connecting PCs to corporate mainframes for years, real-time mainframe-to-PC systems that transfer gobs of data are not that common. Double that warning for links with minicomputers and workstations.

Decision support

The right hardware platform for an expert system depends on its complexity, need for timely data and networking capabilities



Complex tool	☐	☐	☐	☐								
Moderate tool					☐	☐	☐	☐				
Simple tool									☐	☐	☐	☐
Real-time access	☐	☐			☐	☐			☐	☐		
Data download			☐	☐			☐	☐			☐	☐
No network	☐		☐		☐		☐		☐		☐	
Network		☐		☐		☐		☐		☐		☐
Platforms in order of preference	M	M W	W M P	W M P	M	M P	M P	P M	M	P M	P	P

M = Mainframe expert system P = PC expert system
W = Workstation/Minicomputer expert system

CW CHART: DOREEN DAHLE

With our three checklists in hand, we can make a pretty good decision as to where our expert systems should run using the accompanying chart. It's based on a few fundamental relationships:

- The more complex the tool in terms of expert systems features, the more likely it will require a large platform.
- If the system requires immediate access to mainframe data, the more likely it will need to run on that platform.
- The better your network, the more likely you will be able to cut costs by running it on a PC.

Note that the requirements are interrelated. If you have a robust network linking PCs and a mainframe, you might be able to run the system on a PC even though you need real-time data from the mainframe.

Working from the top to the bottom of the chart, find the pattern that matches your system. Take, for example, the Airline Seat Advisor, an expert system developed by the former Sperry Corp. and Intellicorp that assigns discount fares to airline flights. It exhibits the features of a complex tool, requiring a lot of expert systems features. It also is not dependent on a slew of corporate data and requires no real-time access. The answer is to select a workstation — just what we would pick if we used this handy little chart.

Once you have selected the platform, choosing the software is much easier. There are only so many tools for a workstation and so many for a mainframe, and the ones for each platform exhibit very similar characteristics. Using your expert systems features checklist, the software should almost select itself.

Keyes is president of New Art, Inc., a management and computer consulting firm in New York, and a former managing director of technology at the New York Stock Exchange.

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PS/2 Model 50	$1,800	$1,900	$1,500
PS/2 Model 60	$2,700	$2,825	$2,500
Compaq Portable I	$645	$750	$550
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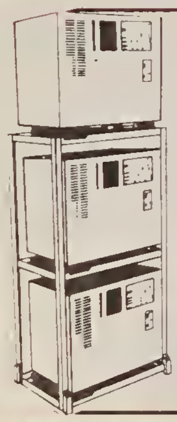

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Sealed proposals will be received by the CDPA, 301 N. Lamar St., 301 Building, Suite 508, Jackson, MS 39201 for the following equipment and services:

Request for Proposal No. 1722, due Thursday, February 8, 1990 at 3:30 p.m. for the acquisition of local area network with 1 80386-based file server, 3 80286-based workstations and connection of 4 existing 80286-based workstations for the MISSISSIPPI STATE DEPARTMENT OF HEALTH.

Request for Proposal No. 1723, due Thursday, February 8, 1990 at 3:30 p.m. for the acquisition of a turnkey, local area network to accomodate an alumni development software package and a fund accounting software package for PEARL RIVER COMMUNITY COLLEGE.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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The Port of Los Angeles solicits proposals for the purpose of selecting a vendor to provide a new mainframe computer. Minimum requirements include:

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Request for Proposal documents may be obtained by calling Pat Markham (213) 519-3413 between the hours of 8 A.M. and 4 P.M., Mon-Fri, West Coast Time or by writing to the address below.

A sealed proposal must be received by the Port no later than March 2, 1990

Stan Johnson
Director - Management Information Systems
Port of Los Angeles
425 South Palos Verdes St.
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Iowa State University requests information on facilities management software designed to support 125 buildings totalling 12 million gross square feet. The software must include work control, preventative maintenance, purchasing, storeroom, equipment rental and personnel modules. A university accoiunting interface module must be available. Optional modules for utility billing and space management are desirable. The software must run on HP3000 900 SERIES or HP9000 800 MODEL machines operating under MPE XL or HP-UX. Please submit information and names, addresses and telephone numbers of five users by February 5, 1990 to: Mr. Michael E. Hamilton, Information System Analyst, Facilities Planning & Management, Iowa State University, Ames IA 50011, 515/294-3942.

NOTICE OF PUBLIC HEARING

On February 27, 1990, at 9:30 AM in Conference Room A, 12th Floor, Robert E. Lee Building, Jackson, Mississippi, the State of Mississippi Central Data Processing Authority (CDPA) will host a public hearing for all interested parties to express their views on CDPA policies and services. Attendance is open to everyone, but oral presentations will be scheduled. Only those submitting a written response prior to February 15, 1990 will be scheduled to speak. Persons who would like to make a presentation should call Myra Young at (601) 359-2607 for a copy of the Hearing Procedures.

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Request for Proposals

HAND DELIVERED SEALED PROPOSALS will be received by representatives of the Department of Transportation, Room 1232A, 40 Worth Street, New York, NY 10013 as follows:

Proposals will be received until 5:00PM on the date specified. **Thursday, February 22, 1990.**

FOR: The Furnishing And Installing Of Office Automation Equipment And Telecommunications Networking For The Department of Transportation Of The City Of New York.

Proposal No. C89-1027/RFP
Proposal Document: $25.00

A Pre-Proposal Conference will be conducted by the Department Of Transportation on **Tuesday, January 30, 1990** at 2:30PM at 40 Worth Street, 12th Floor, Room 1236, New York, NY 10013.

For further information, contact Ms. Terri Stahling at (212) 566-1022. **Proposal Documents may be purchased at the Department of Transportation, Division of Fiscal Affairs, Room 1232A, 40 Worth Street, New York, NY 10013** between the hours of 9:00AM-3:00PM Monday thru Friday, Payment in cash or certified check.

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REQUEST FOR PROPOSAL
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The Clerk of the Circuit Court of Hillsborough County, Florida, acting in his capacity as Clerk to the Board of County Commissioners, solicits proposals for the purpose of selecting a vendor to provide software for the Board of County Commissioners of Hillsborough County, Florida, for a financial accounting management system.

Request for Proposal documents may be obtained by calling (813) 272-5192 between the hours of 8:00 A.M. and 5:00 P.M., Monday through Friday.

There will be a Proposer's Conference on February 8, 1990, at 9:00 A.M. at 504 East Tyler Street, Tampa, Florida 33602. All interested vendors are encouraged to send a representative.

A sealed proposal must be received by the Clerk no later than 10:00 A.M. on March 8, 1990. All proposals received by 10:00 A.M. will be opened at that time. There will be no exceptions to this deadline.

Dated at Tampa, Florida, this 17th day of January, 1990.

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Forecast individual needs to keep projects on time and careers moving

BY SUE REDKEY
SPECIAL TO CW

The training department has contacted you as part of its 1990 needs analysis. How many of you could respond this way: "I'll send you a summary of this year's individual training plans for the people on my staff; they indicate priorities and desired time frames."

Do you, as an information systems manager, work with each person on your staff to develop such plans? Do you plan training programs for your experienced staff members as well as for trainees and new hires? Do you plan for everyday needs along with new technology? Do you look beyond technical skills to consider other abilities that your staff needs to really succeed?

There are two basic issues here: the need to take the time to understand and plan training needs for each individual on your staff and the need to make development, not just training, part of the plan.

It is part of your job as a manager to develop your staff. Doing so requires knowledge of a staff member's job and awareness of the individual's skills and needs. It also requires planning. It may prove difficult to actually fit the needed training into your schedule and budget, but to make the most of your resources and dollars, it helps to have a plan.

Your first concern is to see that each person on your staff has the knowledge and skills to do his current job. Do you have a detailed list of tasks performed and skills required for each position you manage? Do you know individual competencies as measured against needed skill levels?

It is not enough simply to say that everyone needs to know IBM's JCL when you have one lead person who must write procedures for new systems while everyone else occasionally maintains existing JCL. And it is not enough for a programmer to tell you, "Sure, I know JCL," without demonstrating that she knows how to use JCL as her job requires her to use it.

A full skills assessment, which identifies the gaps between required skills and current proficiencies, can be well worth the time and effort invested in it. Depending on the size of the IS staff, such an assessment might require several months. But if it is done well — kept simple and automated when possible — you will have a structure that will make annual updates relatively easy.

This type of skills assessment gives you and your staff a way to measure progress as well as current proficiency. As you plan your projects, be sure to build in time for staff training. Know ahead of time who will need how much training and in what time frame. By doing so, you can avoid delaying projects.

The second concern is professional development. When you say you are an IS professional, are you simply saying that you get paid to develop or install computer systems? Probably not. The term IS professional implies more than just technical skills: It implies commitment and integrity as well.

Do you consider IS professionals to be communicators as well as coders? Do you want them to know your company's business as well as the IS profession? Do you want them to prepare for additional responsibility and leadership? If so, make sure their plans include the appropriate education.

A comprehensive training plan might address the following issues:

- Technical skills, such as hardware, software and tools.
- Project skills, such as planning, estimating, tracking, documenting, team building and facilitating groups.
- Communication skills, including personal interaction, conflict resolution, internal consulting, negotiation, presentations, technical writing and business writing.
- Business knowledge, such as the organization and structure of your company, concepts and terminology of your industry, business objectives of users and the internal and external influences that affect their needs.
- Personal skills, such as time management, dealing with stress and personal interaction.
- Management skills, such as supervising, conducting meetings, handling performance reviews, developing personnel, recruiting, interviewing and accounting.

To plan for professional development, start by clearly defining what it calls for in your firm. Professional skills might be listed along with technical skills in the profile for each job title.

Then, get to know each person for whom you are creating a plan. Find out about the individual's career aspirations and personal preferences, then identify those areas in which training can help further his goals. The timing of this training may not be critical, but if it is included in the plan it is much less likely to be overlooked or dropped.

With scarce resources and tight budgets, it is easy to focus only on the training needed immediately to meet project schedules. However, if you want to retain qualified personnel in these days of a dwindling work force, you do not want to ignore professional development.

Redkey is a data processing instructor at UNUM Life Insurance Co. in Portland, Maine, and author of *The Technical Instructors Handbook — From Techie to Teacher.*

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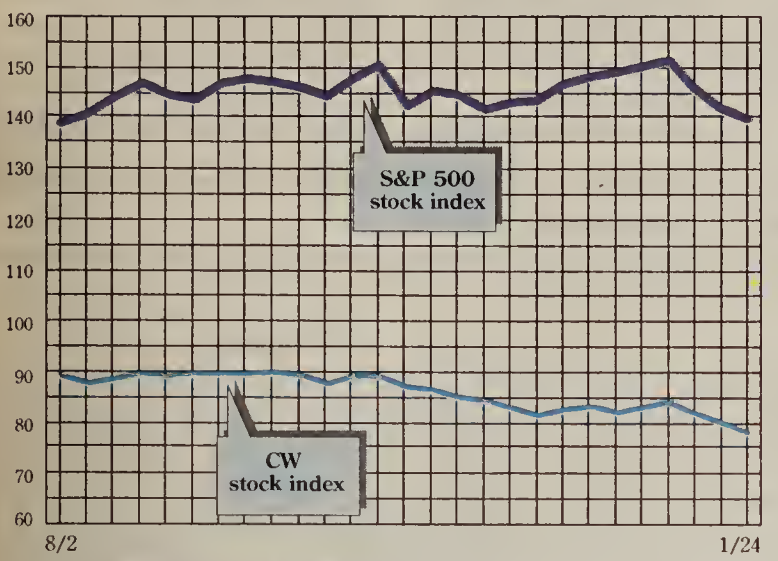

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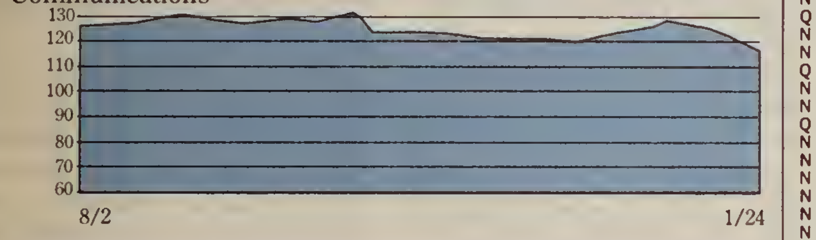

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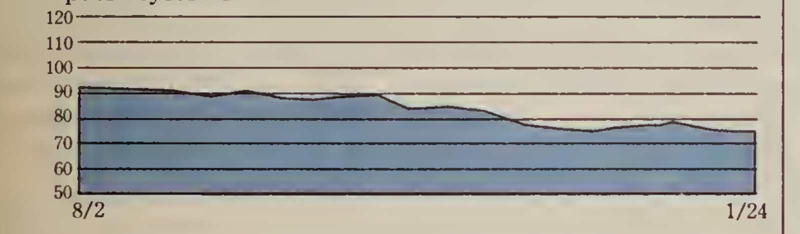

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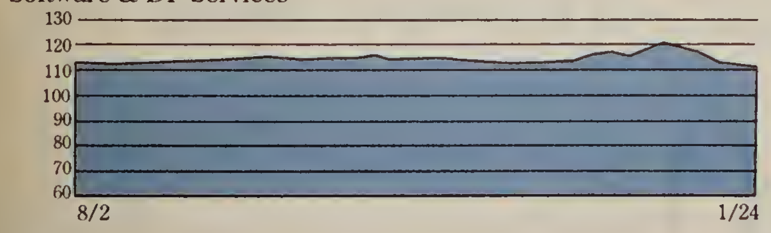

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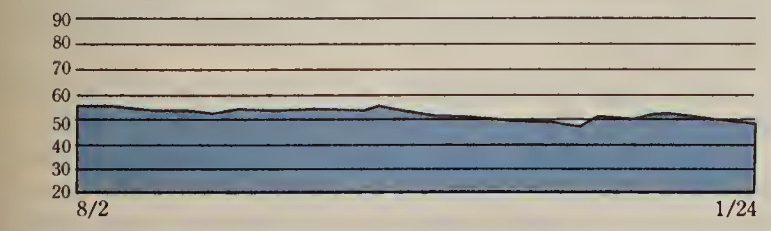

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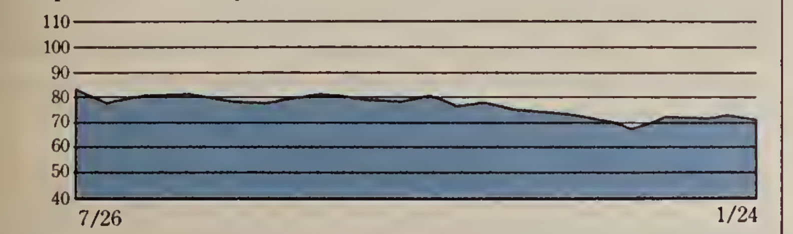

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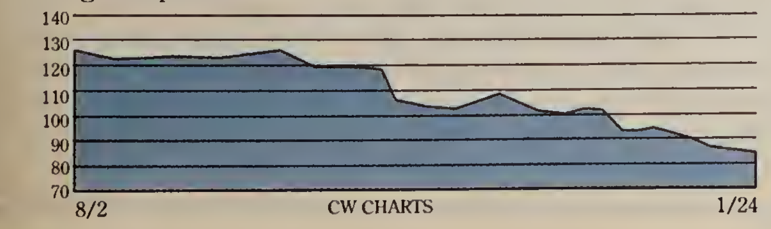

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Q	ANDREW CORP	6	3	21	-1.8	-7.7
Q	ARTEL COMM CORP	9	2	7.5	-0.6	-7.7
N	AT&T	47	30	41.25	-1.3	-2.9
Q	AVANTEK INC	7	3	3.438	0.1	1.9
N	AYDIN CORP	21	14	15.25	0.1	0.8
N	8ELL ATLANTIC CORP	114	72	95	-3.0	-3.1
N	8ELLSOUTH CORP	59	40	51.375	-0.6	-1.2
Q	COMPRESSION LA8S INC	13	3	10.5	-0.6	-5.6
Q	CONTEL CORP	37	22	26.125	-2.8	-9.5
Q	DATA SWITCH CORP	6	2	2.625	-0.6	-19.2
Q	DIGITAL COMM ASSOC	25	17	20.25	-1.0	-4.7
Q	DYNATECH CORP	21	16	16.5	-0.3	-1.5
Q	FI8RONICS INTNL INC	7	4	6	0.0	0.0
Q	GANDALF TECHNOLOGIES	7	4	3.875	-0.4	-8.8
N	GENERAL DATACOMM INDS	7	4	4.625	-0.3	-5.1
N	GTE CORP	72	44	62.875	0.4	0.6
Q	INFOTRON SYS CORP	13	7	7	-0.8	-9.7
N	ITT CORP	65	51	53.875	-1.3	-2.3
N	M A COM INC	9	4	4.125	-0.5	-10.8
Q	MCI COMMUNICATIONS CORP	49	23	38.75	-0.4	-1.0
N	NETWORK EQUIP TECH INC	32	19	28.375	-1.0	-3.4
Q	NETWORK SYS CORP	10	7	8.375	-0.6	-6.9
N	NORTHERN TELECOM LTD	25	14	23.75	0.0	0.0
Q	NOVELL INC	38	24	29.25	-0.9	-2.9
N	NYNEX CORP	92	67	82.5	0.5	0.6
N	PACIFIC TELESIS GROUP	52	32	46	-1.0	-2.1
A	PENRIL CORP	9	4	6.375	-0.3	-3.8
N	SCIENTIFIC ATLANTA INC	25	14	21.5	0.0	0.0
N	SOUTHWESTERN BELL CORP	65	42	55.125	0.4	0.7
Q	3 COM CORP	29	10	11.5	-0.6	-5.2
N	U S WEST INC	81	59	69.5	-2.5	-3.5

Computer Systems

EXCH		52-WEEK RANGE		PRICE CLOSE JAN. 24 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLIANT COMPUTER SYS	7	3	6.125	0.4	6.5
Q	ALPHA MICROSYSTEMS	8	4	4.375	0.1	2.9
Q	ALTOS COMPUTER SYS	8	5	5.375	-1.4	-20.4
A	AMDAHL CORP	23	11	14.75	-0.3	-1.7
Q	APPLE COMPUTER INC	50	32	34	0.8	2.3
N	BOLT BERANEK & NEWMAN	11	6	6	-1.1	-15.8
N	COMPAQ COMPUTER CORP	113	65	82	-0.6	-0.8
N	COMMODORE INTNL	20	7	8.5	-0.3	-2.9
Q	COMPUTER AUTOMATION INC	6	2	2.625	-0.5	-16.0
N	CONTROL DATA CORP	24	16	17	-0.5	-2.9
N	CRAY RESH INC	66	31	42.75	3.6	9.3
Q	DAISY SYS CORP	7	0	0.688	-0.1	-8.3
N	DATA GEN CORP	20	10	9.5	-1.6	-14.6
N	DATAPOINT CORP	6	3	3.75	-0.4	-9.1
Q	DELL COMPUTER CORP	10	5	4.875	-0.4	-7.1
N	DIGITAL EQUIP CORP	122	77	79.75	-8.1	-9.2
N	FLOATING POINT SYS INC	4	1	1.625	0.0	0.0
N	HARRIS CORP	40	27	30.875	-1.8	-5.4
N	HEWLETT PACKARD CO	62	40	44.75	-1.0	-2.2
N	HONEYWELL INC	92	60	84.125	-0.6	-0.7
N	I8M	131	93	97.5	-1.4	-1.4
Q	INFORMATION INTL INC	16	12	12.875	-0.3	-1.9
N	MAI 8ASIC FOUR INC	11	2	3.625	1.4	61.1
N	MATSUSHITA ELEC INDL LTD	188	154	156	0.0	0.0
Q	MENTOR GRAPHICS CORP	22	13	18.5	0.4	2.1
N	N8I INC	3	0	0.344	0.0	-8.3
N	NCR CORP	67	53	64.875	1.6	2.6
N	PRIME COMPUTER INC	21	6	6	-0.1	-2.0
Q	PYRAMID TECHNOLOGY	25	9	24.25	3.4	16.2
Q	SEQUENT COMP SYS INC	23	10	21.25	-0.1	-0.6
Q	SHARE8ASE CORP	4	0	0.375	0.1	50.0
Q	SILICON GRAPHICS CORP	30	14	29.5	1.3	4.4
Q	SUN MICROSYSTEM INC	23	13	17.375	0.9	5.3
Q	SYMBOLICS INC	3	1	0.813	-0.2	-18.7
N	TANDEM COMPUTERS INC	26	15	25.125	-0.1	-0.5
N	TANDY CORP	49	36	36.75	0.0	0.0
N	ULTIMATE CORP	12	7	7.375	-0.6	-7.8
N	UNISYS CORP	31	12	14.125	-0.4	-2.6
A	WANG LABS INC	11	4	4	-0.5	-11.1

Software & DP Services

EXCH		52-WEEK RANGE		PRICE CLOSE JAN. 24 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMERICAN MGMT SYS INC	19	11	11	-0.5	-4.3
Q	AMERICAN SOFTWARE INC	23	11	20.625	-0.4	-1.8
N	ANACOMP INC	8	3	3	-1.0	-25.0
Q	ANALYSTS INTL CORP	20	11	15.625	-0.4	-2.3
Q	ASHTON TATE	24	9	10.75	-0.6	-5.5
Q	ASK COMPUTER SYS INC	18	7	8	0.0	0.0
N	AUTO DATA PROCESSING	51	36	48.25	0.3	0.5
Q	AUTODESK INC	44	27	37.5	-0.8	-2.0
Q	8MC SOFTWARE INC	33	14	29.75	0.3	0.8
N	8USINESSLAND INC	15	7	7.125	0.4	5.6
Q	COGNOS INC	9	4	4.625	0.2	4.2
N	COMPUTER ASSOC INTL INC	22	11	11.5	-0.9	-7.1
Q	COMPUTER HORIZONS CORP	11	7	8.75	0.3	2.9
N	COMPUTER SCIENCES CORP	59	48	51.75	-2.5	-4.6
N	COMPUTER TASK GROUP INC	16	9	9.375	0.1	1.4
Q	COMSHARE INC	42	23	34.5	-0.6	-1.8
Q	CORPORATE SOFTWARE	16	8	8.75	-0.8	-7.9
N	GENERAL MTRS (CLS E)	58	43	51	-1.9	-3.5
Q	HOGAN SYS INC	7	4	3.875	-0.4	-8.8
Q	INFORMIX CORP	16	8	14.875	0.4	2.6
Q	INTELLICORP INC	6	3	4.125	-0.3	-5.7
Q	LEGENT CORP	32	21	25.75	-1.0	-3.7
Q	LOTUS DEV CORP	34	19	28.75	0.8	2.7
Q	MICROSOFT CORP	96	46	90.75	3.3	3.7
Q	NATIONAL DATA CORP	35	23	29	-2.0	-6.5
N	ON LINE SOFTWARE INTL INC	11	5	11	0.4	3.5
Q	ORACLE SYS CORP	26	11	20.375	0.1	0.6
N	PANSOPHIC SYS INC	19	12	16	-0.1	-0.8
Q	PHOENIX TECHNOLOGIES INC	19	3	3.5	-0.1	-3.4
Q	POLICY MGMT SYS CORP	38	22	30.75	-2.3	-6.8
Q	PROGRAMMING & SYS INC	22	16	17.25	-4.5	-20.7
Q	RELATIONAL TECH INC	16	5	7.875	0.4	5.0
N	REYNOLDS & REYNOLDS CO	34	20	19.625	-1.3	-6.0
Q	SAGE SOFTWARE INC	11	7	8.25	0.1	1.5
Q	SEI CORP	20	16	17	-1.3	-6.8
Q	SHARED MED SYS CORP	19	12	12.75	-1.3	-8.9
Q	SOFTWARE PUBG CORP	21	10	18.5	2.0	12.1
A	STERLING SOFTWARE INC	9	5	8.625	0.5	6.2
Q	SUNGARD DATA SYS INC	26	13	21.25	-1.3	-5.6
Q	SYSTEMATICS INC	40	30	32.75	-1.8	-5.1
N	SYSTEM CENTER INC	26	17	22	-0.5	-2.2
N	SYS. SOFT INC	23	12	22	0.3	1.1
Q	WORDSTAR	3	1	1.063	0.1	13.3

Semiconductors

EXCH		52-WEEK RANGE		PRICE CLOSE JAN. 24 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADV MICRO DEVICES INC	11	7	7.625	0.0	0.0
N	ANALOG DEVICES INC	13	8	7.875	-0.6	-7.4
Q	ANALOGIC CORP	11	8	9.5	-0.3	-2.6
Q	CHIPS & TECHNOLOGIES INC	26	14	17.5	1.0	6.1
Q	INTEL CORP	39	23	38	0.4	1.0
Q	MICRON TECHNOLOGY INC	26	7	8.125	-0.9	-9.7
N	MOTOROLA INC	64	40	55.75	-4.1	-6.9
N	NATL SEMICONDUCTOR	9	5	6.125	0.0	0.0
N	TEXAS INSTRS INC	47	28	33.125	-2.5	-7.0
A	WESTERN DIGITAL CORP	15	6	9.375	-0.5	-5.1

Peripherals

EXCH		52-WEEK RANGE		PRICE CLOSE JAN. 24 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLOY COMP	3	1	1.813	0.2	11.6
N	AM INTL INC	6	3	3.75	-0.3	-6.3
Q	AST RESH INC	15	7	13.5	-0.6	-4.4
Q	AUTO TROL TECH CORP	6	4	3.5	-0.1	-3.4
Q	8ANCTEC INC	20	11	16.625	1.8	11.8
Q	CIPHER DATA PRODS INC	11	4	6.75	0.3	3.8
A	COGNITRONICS CORP	8	3	4.5	-0.4	-7.7
Q	CONNOR PERIPHERALS	16	7	13.75	0.1	0.9
A	DATAPRODUCTS CORP	18	6	6.875	-0.3	-3.5
A	DATARAM CORP	12	8	9.625	0.1	1.3
N	EASTMAN KODAK CO	52	38	38.625	-1.6	-4.0
N	E M C CORP MASS	6	3	4.125	-0.3	-5.7
Q	EMULEX CORP	12	5	5.375	-0.6	-10.4
Q	EVANS & SUTHERLAND	25	15	23	1.8	8.2
Q	ICOT CORP	3	1	1.25	-0.1	-9.1
Q	INTERLEAF INC	10	5	6	-0.1	-2.0
Q	IOMEGA CORP	4	2	3.25	-0.3	-7.1
Q	IPL SYS INC	9	5	7	0.4	5.7
Q	LEE DATA CORP	4	1	1.875	-0.3	-11.8
Q	MASSTOR SYS CORP	4	2	1.938	-0.1	-6.1
Q	MAXTOR CORP	12	7	9	0.0	0.0
Q	MICROPOLIS CORP	8	3	3.875	-0.6	-13.9
Q	MINISCRI8E CORP	7	0	0.375	0.1	19.8
N	MINNESOTA MNG & MFG CO	84	65	78	-3.1	-3.9
Q	PERS COMP PRODUCTS INC	6	4	3.813	0.0	0.0
Q	PRINTRONIX INC	10	7	9.75	-0.3	-2.5
N	QMS INC	14	7	13	-0.1	-1.0
Q	QUANTUM CORP	17	4	9.625	-1.8	-15.4
N	RECOGNITION EQUIP INC	13	6	6.375	0.0	0.0
Q	REXON INC	8	6	6.25	-0.4	-5.7
Q	SEAGATE TECHNOLOGY	16	9	15.75	0.1	0.8
N	STORAGE TECH CORP	23	9	17	1.1	7.1
Q	TANDON CORP	1	0	0.75	0.0	0.0
N	TEKTRONIX INC	24	16	17	-1.1	-6.2
Q	TELEVIDEO SYS INC	1	0	0.281	0.0	-10.2
N	XEROX CORP	69	54	54.375	-1.4	-2.5

Leasing Companies

EXCH		52-WEEK RANGE		PRICE CLOSE JAN. 24 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMPLICON INC	115	9	9.375	0.4	4.2
N	CAPITAL ASSOC INTNL INC	9	4	3.5	-0.6	-15.2
N	COMDISCO INC	34	21	22.375	-1.3	-5.3
Q	CONTINENTAL INFO SYS	2	0	0.234	0.0	15.3
Q	LDI CORPORATION	18	12	14.25	-1.5	-9.5
Q	PHOENIX AMERN INC	5	3	3.125	-0.1	-3.8
Q	SELECTERM INC	9	6	5.75	-0.3	-4.2

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Mild thing

Investors' calm enables firms to ride out fourth-quarter lows

As quarterly earnings continued to roll out last week, investors played by the golden rule and handed technology stocks just what the companies dished out: predictable reactions, peppered with a few mild surprises.

The understanding attitude that a week earlier allowed IBM stocks to rise in the face of an unwelcome — but not unexpected — fourth-quarter profit drop prevailed, boosting IBM 2⅜ points to a Thursday close of 95⅞. The tolerant mood extended to Digital Equipment Corp., which began its climb back from a steep stock decline triggered by disappointing fourth-quarter figures. DEC closed at 78⅛, up ⅜ of a point.

On the other hand, investors' patience with AT&T waned when the company followed a network software debacle with an underwhelming earnings outlook. AT&T dropped one point to a 41⅛ point close.

A noted Wall Street brokerage house lowered its estimates on Motorola, Inc. and investors knocked the firm's stock down 1⅝ points to 55¾. However, analysts' enthusiasm for Alliant Computer Systems Corp.'s latest product introduction sent Alliant's stock to a Thursday close of 6½ points, up ⅝.

NELL MARGOLIS

DEC

FROM PAGE 1

six months to a year down the road.

Product confusion

David Robinson, vice-president of MIS at Southeastern Freight Lines, Inc. in Columbia, S.C., has halted all DEC hardware purchases while he awaits the mainframe VAX 9000, scheduled to begin shipping this spring.

Robinson's only criticism of DEC is in leaving too wide a gap between its midrange 6000 series and the mainframe VAX.

"Migrating from the 6000 family to the 9000 family is hard to justify because, for us, the 9000 is overkill," he explained. "The 9000 has five times the computing power of the 6000, and we don't need that. What we desperately need is the input/output capacity." His relationship with the company, however, is "better than ever," and he credits the sales staff with improvement in recent years.

Dominic Presutti, director of MIS at Imed Corp., a medical supply manufacturer in San Diego, said users were accustomed to a "fairly large gap" of time between product introductions from DEC. "They've got new processors just flying out their doors," Presutti said. "Who needs that? Maybe their competitive posture is just too ambitious. It's confusing. What is the right system to buy?"

Bob Randolph, an industry consultant at Technology Financial Services in Westford, Mass., said the computer industry's technological marvels are racing too far ahead of the more stately pace of the general business world.

"Companies don't have the time or the money to absorb any more technology, no matter how wonderful it is," Randolph said.

"Product turnover is another important issue here," said Paul Zorfass, director of computer research at The Yankee Group in Boston. "Salespeople take time to learn a new product, and the place they really do that is in the customer sites."

'Revolving door' sales

While several customers expressed dissatisfaction with both the depth of knowledge and the "revolving door" nature of the sales force from DEC, others have seen steady improvement and said they are pleased with their local representative.

"I think they've taken pretty good steps to keep us informed on new products that can help our business," said Raymond Lawrey, IS manager at Monsanto Research Corp. in Miamisburg, Ohio.

The crucial factor in customer satisfaction appears to be a longer term relationship with the local sales representative.

"My biggest gripe is that the person we have changes every other year," said Geraldine MacDonald, associate vice-president for computing services at the State University of New York at Binghamton. "Just about the time the salesperson gets a handle on our account, he moves on to something else."

JOYCE RAVID

Avon's Perry

"It's difficult to get good marketing sales support from DEC," agreed Greg Trexler, manager of end-user computing support at Loyola University Medical Center in Maywood, Ill. "Over the past year, they've switched salespeople [on us] about three times." Yet he praised the quality of DEC products, particularly processors, CPU boards and disk drives. "I believe they don't put out something new unless they can beat themselves on price/performance," he added.

DEC checklist

Top 10 concerns of DEC customers

	Average rating
Better multivendor connectivity	8.0
Lower prices	7.9
Industry standards	7.9
Better software support	7.8
Ease of use	7.8
Better documentation	7.8
Better multivendor compatibility	7.8
Better software releases	7.6
Better integration	7.6
Better networks	7.5

1=least interest 10=most interest
Respondent base: 386

SOURCE: SIERRA GROUP, INC. CW CHART: MARIE HAINES

Admitting that his department has been "spoiled by IBM," Trexler said comparing the computer giant to the smaller company is perhaps unfair. "Our IBM salesperson just about lives here," he said. "We've got so much more IBM equipment than DEC — but still, the sense you come away with is that your IBM salesman is always available, always helpful, and your DEC salesman isn't."

Some customers said they would like to see a more aggressive stance from DEC in promoting its equipment and applications.

"DEC is not very active in pitching their packages at me," said Doug Burdett, manager of engineering computing at General Datacomm, Inc. in Middlebury, Conn. "I have to go to them and tell them what I'm interested in."

Priced to win

In competitive pricing, users generally had a favorable impression of DEC.

Barbara Goda, manager of the information center at the Atlanta-based Life Insurance Co. of Georgia, said her company's relationship has changed for the better with DEC. "We have noticed better packaging and more trade-in offers," she said. "We use DEC for office automation, and the equipment is just super."

However, after-the-sale support often came up as an equally important point with users.

Loyola's Trexler voiced approval of DEC's pricing and competitiveness, for example, but said past problems with maintenance support led him to switch to a contract with Control Data Corp. "CDC gives us 24-hour maintenance for about 25% less than DEC's five-day, 8-hour-a-day deal," he said.

When asked about how DEC responds to their specific business needs, some customers mentioned noticeable improvements during the past year or two.

At Imed Corp. in San Diego, DEC sales representatives got a nod of approval for customizing their presentations and speaking directly to the firm's business goals.

"They haven't always understood our business needs and would sometimes try to make a fit when there is not fit," Presutti said.

Nowadays, however, he notices that sales representatives are better armed with information, asking more questions and more likely to act as "middlemen" for the "real nuts-and-bolts people" behind the products.

"They've worked hard to constantly bootstrap themselves into the larger environments," agreed Albert Schmitz, director of operations and technical services at the Northeast Utility Service Co. in Wethersfield, Conn.

Schmitz said he sees "steady improvement" in field services, procurement and installation cycles. In addition, he praised DEC's on-line support facility in Colorado Springs as "second to none."

The large utility company also enjoyed "more aggressive pricing" when striking deals with DEC, he added, particularly in bundling arrangements that packaged smaller components into larger deals.

At Avon Products, Inc. in Rye, N.Y., DEC's relationship with the company has diminished as several large projects in manufacturing control and warehousing came to a close.

"We've tended to order less hardware, and they've tended to be less active," said Ray Perry, vice-president of information systems.

DEC report card

While giving DEC relatively high ratings on a scale of 1 to 10, users indicate slight overall declines in satisfaction from 1988 to 1989

		System	Workstation	LAN
Service				
	1988	8.1	8.7	8.2
	1989	8.0	8.1	7.6
Software support				
	1988	7.4	7.8	8.2
	1989	7.3	7.3	7.1
Performance				
	1988	7.7	8.6	8.3
	1989	7.6	8.2	7.5

Respondent base: 1988 = 382, 1989 = 386

SOURCE: SIERRA GROUP, INC. CW CHART: JOHN YORK

Lesser attention level

Rather than receiving attention from the district manager for sales, for example, the company now deals with an ordinary field representative. "Things don't move quite as quickly or get resolved as quickly anymore," Perry noted.

While he finds DEC competitive in the price/performance arena, Perry faults the company's deal-making as "not necessarily as eager" as other vendors, such as AT&T, Avon's network vendor.

"What we want to see is a tighter coupling between DEC's products and what the business solutions are that we can get from them," he explained. "They keep talking about it, but we don't see results."

One customer site with no complaints is John Deere & Co. in Dubuque, Iowa, one of DEC's largest customers.

"Service is one of the reasons we're so happy," said Keith Enstrom, computer systems manager at Deere.

Enstrom praised his local DEC sales representative in Dubuque for solid product knowledge and said the minicomputer maker's market troubles in the past year left him "more curious than concerned."

Ray Brandt, manager of quality systems at Deere, noted that DEC's market segment is maturing, and new competition may be "a whole lot more than they'd bargained for."

Computerworld staffers contributing to this report were Mitch Betts, Jean S. Bozman, Sally Cusack, James Daly, Nell Margolis, Richard Pastore and Alan J. Ryan.

Teacher's pet

Owing to its strength in the research and scientific market, Digital Equipment Corp. is a prominent face at universities. One area in which DEC has impressed its major university customers this past year was in offering a new software licensing agreement that allows the schools to copy, distribute, manage and debug software packages on their own rather than buying a copy for each machine.

For example, special deals on software gave DEC high marks with the University of Cincinnati. Jerome York, director of the computer center there, said that in the past three years, his local sales representatives vanquished their problems understanding their own product line and are now working "very hard to understand our needs."

While DEC's midrange machines — a VAX 6000 Model 440 and two 8000 systems — still play a significant role at the State University of New York at Binghamton, the anchor for the data center still consists of IBM 3090 and 4381 mainframes. Where DEC is losing more ground than ever before, however, is in the personal computer and workstation business.

"All of DEC's Decmates and PCs are disappearing around here," said SUNY Binghamton's Geraldine MacDonald. "They're being replaced [by IBM-compatible machines] because the software that's proprietary for those systems is expensively priced and the maintenance is expensive, too."

At New Mexico State University's computer center in Las Cruces, operations manager Richard Gottlieb said Sun Microsystems, Inc. workstations have "taken a bite" out of DEC, which led to more attentive salespeople and better discounting.

Foreign affairs win DEC allies

BY AMIEL KORNEL
CW STAFF

If you are wondering whether doing business worldwide really pays, just ask Digital Equipment Corp.

DEC's growth currently depends entirely on its overseas operations. While sales in the U.S. edged down slightly last year, revenue elsewhere rose 22.5% over fiscal 1988 in dollar terms and accounted for 55.1% of worldwide revenue.

Europe brought in the lion's share — 40% of the firm's total sales, or $5.09 billion. This was up from 37% in the previous year.

Digital's European customers said much of the credit for the company's continued growth there should go to improvements in its marketing and support organizations.

"Their service has become more effective," said Roger-Yves Argivier, information systems director at Ciments Lafarge S.A., a $700 million-a-year cement maker based in Paris.

DEC users further north agreed. "They have become a lot easier to do business with," said Arrick Wilkinson, IS director at Dundee College of Technology in Dundee, Scotland. "They've started to return my phone calls." He said that DEC sales representatives and systems engineers have begun showing greater understanding of his school's computing needs. "They're keeping in touch with what our problems are, both big and small," said Wilkinson, a former chairman of Digital Equipment Computer Users Society Europe. Wilkinson said DEC offers "a good mix of products that is exactly what people are looking for to improve productivity."

Other European users contacted last week also applauded DEC products for responding to their demands for distributed processing and open systems capable of operating in heterogeneous environments.

They added that DEC has become more aggressive in pushing maintenance and service contracts and is showing greater readiness to support equipment from third-party vendors.

Users said that sales discounts have gotten bigger, varying from 20% for small systems to 40% for high-end VAXs.

At Aerospatiale S.A. — French maker of the Exocet tactical missile, satellites and aircraft — IS hardware coordinator Jean-Claude Levresse said DEC agreed to 30% discounts after Aerospatiale complained of differentials between prices in the U.S. and Europe.

Argivier said that over the last 12 months, a period during which his all-DEC site added a VAX 8830 and a VAX 6340 to its panoply of equipment, DEC France has shown greater flexibility in cutting deals.

Smaller customers and third-party resellers were less enthusiastic, however. Alan Brown, marketing manager at European Information Technology, a 12-person systems developer located near London, said, "We're not terribly relevant to DEC anymore. They're selling to big clients."

The continuing rise in DEC's European fortunes also rides on the IS market there, according to analysts. "Europe remains less automated than the U.S.," said Martin Hingley, research director at IDC Europa Ltd. in London. "There's still a lot of opportunity."

Despite the continued growth, some European users and analysts warned that DEC faces competitive pressure from workstation vendors such as Sun Microsystems, Inc. and Hewlett-Packard Co.

"The rising importance of powerful workstations will not favor the growth of DEC," Levresse predicted.

Better hookups, please

It has been said that the network is the computer. And networking was clearly another common concern at large DEC sites.

"I am trying to implement connectivity of dissimilar systems," said General Datacomm's Doug Burdett. "In the past, I might just go and buy whatever big box DEC had, but now I'm concerned about hooking Suns, VAXs and PCs and making them cooperate."

University customers are also clamoring for better networking systems as wide-area networks go campuswide and local-area networks multiply between department offices, said Geraldine MacDonald of the State University of New York at Binghamton.

"I think all the sales reps are weak in this area. IBM doesn't do much better than DEC there," she said. That has forced her to develop in-house networking expertise with a staff of 70.

Tending to eight network locations throughout the U.S. is the most important role the data center plays at Avon Products, Inc., information systems director Ray Perry said. The company consolidated all its IS operations at the Rye, N.Y., facility, which handles order entry, manufacturing systems and financial data on IBM mainframes.

"DEC has never been a network player," Perry contended. "They can do their own networks and own hardware, but they can't talk about anybody else's stuff."

The Yankee Group's Paul Zorfass said that that kind of comment should effectively send up a flare of alarm at DEC. "Networking has always been a strength of DEC," the analyst said. "I think they have many of the right tools in place, though some may not be as well developed. Their NAS [Network Application Support] program is a support strategy meant to encompass DOS, OS/2 and ultimately the Unix world."

MARYFRAN JOHNSON

COMMENTARY

Glenn Rifkin

Just where they want 'em

In the old *Little Rascals* comedies, there is an episode in which Alfalfa is getting pounded mercilessly by the neighborhood bully in a boxing match.

Battered and dazed, he sits between rounds in his corner while Porky and Buckwheat fan him with a towel. Spanky, his trainer, leans over and says, "OK, now you've got him just where you want him."

Digital Equipment Corp. is doing its best Alfalfa imitation, getting battered and bruised. Inside DEC, however, a lot of savvy old-timers are saying, "We've got 'em just where we want 'em."

Just as Alfalfa somehow finds a way to score the big knockout, DEC will show some mean punch in the not-so-distant future.

That's the scenario that DEC insiders believe, in any case, and they've got plenty of history on their side. They also have Ken Olsen, and though he hardly resembles Alfalfa, he has taken more than his share of eight-counts during the past three decades. And he just keeps on scoring knockouts of his own.

DEC's past problems and turnarounds are well documented. The critical question in 1990 is: Is it different now? Has DEC gotten too big, too bureaucratic, too bloated? Can it control costs and avoid layoffs when clearly there are thousands of employees with nothing to do? Have the bean-counters taken over? Is Olsen losing his grip?

Inside DEC, the people are getting tired of this line of reasoning. The malaise of last fall is now turning to anger, and that old family feeling is returning. It's the classic "I can criticize my mother, but don't you say anything bad about her" attitude.

Controlling costs is important, acknowledges Dallas Kirk, head of DEC public relations and a longtime employee. "But there really is no talk of layoffs, and we just don't want to change the traditions of the company."

Kirk admits that there is a delicate balance between the renowned DEC chaos caused by its confusing matrix structure and the complete loss of control. "There's no sense of wheel-spinning going on," Kirk insists. "There's not a lot of butting heads or overlap on projects."

Other insiders agree. DEC remains DEC. "With Ken in charge, there is no chance that the marketers or bean-counters will take over," says one DEC financial analyst. Indeed, Olsen has never let financial analysis dictate strategic direction, and he has not wavered on that point.

The word is that Olsen is not softening at all. He is not out of touch and is fully in charge, says one manager. Perhaps most telling within DEC is that despite the trying financial times, James Osterhoff, DEC's finance vice-president, has not emerged as a power broker. The old guard remains firmly entrenched.

A former DEC manager who spent nearly 20 years there says that comments about DEC being bloated are not only cheap shots, but they miss the point.

"I don't hold them up on a pedestal. If I did, I'd still be there. But the company still values differences, and there is still the chance to take initiative and make it pay off," the ex-manager says. "DEC is the most viable and most aggressive $12 billion company in the world."

So why the long string of down quarters in terms of earnings? Certainly, it is not because of a lack of products. If anything, DEC has been turning out products too fast. This fact belies the idea that an internal bloat is slowing down product development. Customers may be holding up buying decisions simply because DEC keeps delivering new machines that obsolete current ones before they are out of the box.

Is the bureaucracy causing critical delays? The VAX 9000 was late, but is six months delay in a five- to seven-year product development plan really very bad? Hardly. Mark Schulman, an analyst at UBS Securities in New York, believes that if the 9000 had been ready to ship when it was announced, it would have added $1 billion to the recent quarter's earnings, and thus a dismal quarter would have looked great.

Maybe that's why Olsen refuses to listen to Wall Street. The orders are coming in strong for the 9000 — reportedly 100 confirmed orders already — and at $2 million per machine, things ought to look real bright for DEC in the spring.

Most of all, DEC insiders are asking, "Why pick on us? IBM is doing poorly. Apple is doing poorly. The whole economy is in a rut." In a capital equipment business, that's life. DEC has seen it all before.

Furthermore, when this has happened to DEC in the past, the internal machinations clicked into place. People retrained; people started new projects; people took risks. In the early 1980s, DEC hit the skids as pent-up demand for its VAX 8600 grew. Internally, there was a big shake-up: Earnings fell, vice-presidents left, and the media wrote the death notices. But when the 8600 was shipped in 1984, DEC took off like a rocket. "When things went up again, we were ready to respond," says one longtime engineer. "It's really the same now, except everything is wider, broader, deeper, bigger."

In truth, DEC is a strange and unique corporate environment. At the same time, it dances to all sorts of classic corporate dictates. There are internal problems, no doubt, but the same can be said for virtually all large corporations. DEC knows what it must do. It has a vast and fiercely loyal customer base and a solid product line. Those two ingredients make it nobody's patsy in the ring.

Rifkin is a *Computerworld* features editor.

NEWS SHORTS

Net management on the rise

More than 75% of computer users in large companies intend to increase spending significantly on network management systems during the next two years, according to a survey released last week by Business Research Group in Newton, Mass. The survey of 300 officials at Fortune 1,000-size companies for the top three leading network management choices among users were IBM's Netview, AT&T's Unified Network Management Architecture and Digital Equipment Corp.'s Enterprise Management Architecture (EMA). Cincom's Netmaster tied for third place with EMA.

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DEC in systems integration deals

Digital Equipment Corp. has linked up with two systems integrators with the aim of pursuing vertical markets. DEC and Computer Sciences Corp. will go after business in the distribution and logistics marketplace as well as in telecommunications. A similar deal with Arthur D. Little, Inc. is targeted at potential customers in the chemical and pharmaceutical process manufacturing industries, as well as companies in telecommunications service and equipment. DEC's commitment to the alliances involves all of its systems integration products and services.

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Voting system standard approved

The Federal Election Commission last week approved a voluntary standard for the accuracy and security of the computerized vote-tallying systems used by election administrators [CW, Oct. 24, 1988]. Portions of the standard for computer performance, testing and security have already been adopted by seven states.

. . . .

Faster fault-tolerant Unix debuts

Hoping to cash in on the attention currently being given to Unix-based fault-tolerant computers, Integrated Micro Products, Inc. (IMP) announced a 10 million instructions per second (MIPS) fault-tolerant system that it will position against Tandem Computers, Inc.'s 11-MIPS S2 machine introduced earlier this month. IMP's version is based on two Motorola, Inc. 68030 processors, while Tandem's is built on Mips Computer Systems, Inc. R2000 chip architecture. IMP, however, will offer its computer at $130,000; Tandem's starts at $172,000.

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X/Open support grows

Industrywide support continues to grow for X/Open Consortium Ltd.'s open systems standards. Last week, Unix International and the Open Software Foundation expressed their support for X/Open's Open Systems Directive, the result of an extensive market research program to identify open system priorities. Today, the consortium is expected to receive its largest commitment yet from a national government, when the West German government issues a recommendation that goverment ministries seek X/Open-compliant products whenever possible.

. . . .

MAP/TOP users to join COS

The executive committee of the Corporation for Open Systems (COS) has agreed "in principle" to merge the Information Technology Requirements Council (ITRC) into COS, thus consolidating two groups promoting open systems and adding a contingent of users to COS. ITRC is the parent organization of the North American MAP/TOP Users Group.

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Novell hit with $100,000 fine

The U.S. Department of Commerce has imposed a $100,000 civil penalty on Novell, Inc. for alleged violations of export-control rules. The agency said Novell failed to get export licenses on 13 occasions from July 1984 to December 1985. While not admitting the department's allegations, Novell agreed to pay the penalty and implement an internal program to ensure future compliance.

More news shorts on page 8

Kapor dips toe into Mac waters

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Three years after exiting Lotus Development Corp., Mitchell Kapor last week unwrapped On Location, a file utility program said to cut the time it takes to locate and view files by as much as a factor of 10.

"We are helping people recapture time they now waste looking for information they already have," Kapor said. "You don't have to remember where it is or what you called it, only what it was about."

"If you spend a lot of time opening and closing files looking for the right one, it is definitely a time-saver," agreed John Chuang, president of Mactemps, a Cambridge, Mass., temporary agency that specializes in Apple Computer, Inc. Macintosh users.

On Location is the first offering produced by Kapor's fledgling start-up On Technology. Priced at $129.95, it requires a Mac Plus, SE, Portable II or higher with a shared disk and Systems Software 6.0 or higher. It is slated to ship next month and comes with a one-year guarantee, Kapor added.

Kapor's *On Location makes an entrance*

"On Location can search hundreds of megabytes in a minute," Kapor claimed, adding that the average search on an 8M-byte hard disk takes a few seconds.

Although the firm initially set its sights on exploiting untapped niches in the Macintosh market, Kapor is considering a version for the IBM Personal Computer-compatible market. He is leaning toward a Microsoft Corp. Windows version, citing sales estimates of between 40,000 to 70,000 copies per month.

"We have no firm plans as of yet, but we may do a [Microsoft] Word version," added Conall Ryan, vice-president of marketing. Kapor said that port would take less than a year.

A key aspect of the program enables a user of one word processing package to call up and read a file created under a competitive package in its native format. This is achieved through utilizing Claris' XTND file-filter architecture.

Users can locate the name and text of files located on a range of media. On Location combines digital-signature compression, automatic background indexing and Claris Corp. file translators.

PC dealers

FROM PAGE 1

single dealer are over, said Dan Ness, an analyst at Computer Intelligence in La Jolla, Calif. "You can't get Niemen Marcus service and pay K Mart prices," he said.

Further, this dealer polarization will shatter the "myth of one-stop shopping," said Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn. Before choosing a dealer, a customer will "have to decide which it is he or she is buying — a solution or a box," Fiering said.

Chapped lips

For quite a while, major dealers have been giving lip service to stopping product discounts. But competitive pressures, aggravated by overdistribution, have continually punctured dealers' resolve, observers agreed.

Still, some resellers insist that customers will have to share responsibility for propping up margins. "The customer will need to start accepting that prices will begin to go up a bit," said Vic Leventhal, Computerland Corp.'s executive vice-president of corporate sales and marketing.

That will not sit well with users, many of whom told *Computerworld* that price is their first priority. "Price is most important to us," said Chris Wiggins, a microcomputer analyst at Piedmont Natural Gas Co. in Charlotte, N.C.

A dealer price hike would "be a big concern to us because we are a price-conscious company," said James LaCivita, systems manager at Child World, Inc. in Avon, Mass.

In light of the dealer's woes, LaCivita said he expects the steep discounts he gets from Businessland to "go by the wayside eventually." But when that happens, he will simply take his business elsewhere. "There are so many people looking for business today, it's not hard to find good deals," he said.

Despite his hopes for less discounting, Leventhal was forced to agree. "There's always going to be some fool out there who'll offer discounts and drive the price down," he said.

Those customers who require high-level service will also have to pay the piper. Five years ago, services such as installation and training were often given away in order to close a deal.

Leading indicator

Businessland's profits illustrate the margin squeeze besetting the PC dealer channel

	Revenue in millions	Operating income in millions
Fiscal '89	Q2 $301.3	$18.8
	Q3 $293.3	$15.6
	Q4 $322.6	$13.4
Fiscal '90	Q1 $315.9	$8.0
	Q2 $375.0	$5.9

CW CHART: MARIE HAINES

Today, resellers are increasingly charging for them a la carte, analysts said.

Freebie, you and me

Indeed, cracking down on freebie service is part of Businessland's strategy to reverse its profit slide (see chart above).

"We need to get paid for a lot of the value-added services that our people in many cases have been giving away free," said Businessland President David Norman.

"Businessland is in a tough spot because it's trying to be all things to all people," and that saps resources, Ness said.

Dealers who try to provide both high-level service and cut-rate prices "are not going to last in the long term."

"The dealers caught in the middle — the Computer Factories, the Computerlands — must move in one direction or the other, or the market will fall out from under them," agreed Lee Levitt, an analyst at IDC.

Not wanting to test these grim predictions, Computerland is shifting its emphasis toward the services end of the spectrum, according to Leventhal. But it will be difficult to finance high-level service "because the guys making the money are the manufacturers, while the dealer continually gets squeezed," Leventhal said.

The underlying problem — narrow margins — goes back about two years to when IBM began pushing larger orders on dealers, Levitt noted.

"Dealers ordered a lot more products than they could sell at the current pricing," he said. Faced with too much inventory, "they dropped prices and entered a downward margin spiral that they haven't recovered from yet."

Carriers battling over 800 databases

BY ELLIS BOOKER
CW STAFF

During the Martin Luther King Jr. Day outage in AT&T's long-distance network two weeks ago, at least one 800 customer asked if its service could be shunted to an alternative long-distance carrier. It was a request that AT&T was unable to meet.

ANDY FREEBERG

Crash landing: *AT&T's computer switching technicians try to pick up the pieces during holiday breakdown*

That flexibility is technically possible now, however, and it could give users a way to mix and match their 800 providers. The obstacle to this capability is regulatory and involves the ongoing turf war between the local-exchange carriers and the long-distance companies.

Once an 800 number is routed into the long-distance company's network, the number is processed by a database, which converts it and sends it to its ultimate destination.

Central to the current controversy is where 800 databases should reside.

Under a plan advocated by Bellcore, the Bell operating companies' (BOC) jointly owned research and development arm, the translation of interexchange 800 numbers would occur at the local company. With the exception of Southwestern Bell Telephone Co., all the BOCs provide this function for intra-local access and transport area 800 calls within their own regions.

In March, the Common Carrier Bureau of the Federal Communications Commission adopted Docket 86-10, which in principle accepted the notion that the BOCs can provide database services.

"In a nutshell," said Gary Phillips, an attorney and adviser at the Common Carrier Bureau, "the FCC said the BOCs can implement databases but also said they had to reduce call setup time caused by the database access."

The FCC also said it would wait until common-channel signaling had been deployed at 80% of all local telephone company end offices.

With the BOC-based 800 database, one could allocate traffic across multiple carriers or change the percent of traffic going to a carrier based on time of day or the destination of the call.

"When the number reaches the tandem switching office, it can know the customer is presubscribed to MCI. But there is a whole lot more it can do," said Richard O. Levine, associate national director of telecommunications regulatory services at Deloitte & Touche in Washington, D.C.

Typical parameters, Levine said, will be destination, time of day, carrier selection and the place the call originated.

"One of the big advantages [of BOC 800] is number portability," said Eva Low, division manager of CCS/800/alternative billing services at Bellcore. "You don't have to change the 800 number if you want to change carriers."

However, users and interexchange carriers have expressed concern that the call-setup time will increase, perhaps by as much as 5.5 to 7 seconds, depending on whether the call reaches a Signaling System 7 (SS7)-equipped tandem office or an end office.

However, Bellcore is working to ease these concerns. Last week, it conducted the first test connection between the SS7 signaling networks of two local-exchange companies, which involved validating phone company credit card numbers in one region for calls placed elsewhere. According to Bellcore, performance times for the round-trip signaling process were only 1 second, a result that exceeded expectations.

Try our rival

AT&T said last week its operators have been instructed to provide the access codes of other long-distance carriers in the "unlikely" event of another service disruption in its network.

Two weeks ago, when a rare software glitch crippled AT&T's network for nine hours, AT&T operators initially refused to provide the numbers to callers.

But AT&T went on to deny published reports that it had approached its competitors with a "formal interconnection arrangement" to handle service disruptions in the future.

AT&T operators will provide the access codes to customers if they are requested during service outages or may refer customers to their local telephone directory or local telephone company directory assistance operators, AT&T said.

However, noting that there are more than 700 network access numbers now in use for long-distance companies, AT&T said it would only supply its operators with a list of codes for the major national carriers.

ELLIS BOOKER

HP makes plans to reduce work force

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. last week joined the work force downsizing movement, saying it wants to offer 2,400 of its employees — 4% of its U.S. work force — an early retirement.

HP's inducement will not lure all those eligible for retirement, according to an HP spokeswoman, who expects fewer than 1,000 employees to take the company up on its offer.

On Dec. 5, IBM said it was asking 10,000 employees to leave the company.

"Everyone is doing it [thinning the work force]. It's a fad in the midrange," said Sandy Gant, an analyst at Santa Clara, Calif.-based Infocorp. "Everyone's being real pressed for margins. One way to overcome it is to increase the price of computers, but it's easier to get people out."

The move is not aimed at any particular sector, the company said. In fact, HP's Apollo Division, which observers believe would be a prime target for further decreases in the work force, is exempt because the minimum employment time necessary to apply for early retirement is 15 years, and Apollo is less than 10 years old.

Gant said he believes if employees will wait, a better offer is likely to be made later this year. Fifteen-year or 55-year-old employees would get one-half a month's salary for each year of service up to a maximum of one year's salary.

HP said the largest attrition will likely occur in the San Francisco Bay Area, in Colorado and in its Massachusetts medical division.

The move came as no surprise to HP watchers. Following the IBM announcement in December, HP Chief Executive Officer John Young was unfazed by IBM's move. He said that HP has to transfer workers in even the simplest production changes.

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3Com reorganization may signal founder's farewell

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — The next 18 to 24 months will determine whether Ethernet co-inventor Robert Metcalfe stays on with 3Com Corp., the company he founded 10 years ago in the then-embryonic local-area network market.

In an interview last week, Metcalfe, 43, expressed his disappointment with a recent executive reorganization that [CW, Jan. 22] removed him from the running to replace William Krause as president. Krause will continue on as chairman and chief executive officer.

Metcalfe, who once held that seat, has made no secret of his desire to regain the helm, and he is not sure whether an appointment as vice-chairman and ensuing role as company spokesman can hold his interest. "My goal was to be president long term, but that's not going to happen," Metcalfe said. "It's not a surprise, but I'm so disappointed that I haven't figured out what to do now that it has been decided."

The last year has been a tough one, finally breaking quarter after quarter of runaway growth. 3Com's failure to meet Wall Street's expectations rankled some investors and resulted in cost-cutting measures.

Despite some gains, 3Com's board, on which Metcalfe sits, lowered the boom earlier this month, condensing an 11-member executive team down to three newly appointed executive vice-presidents. One of the three will be named president of 3Com in the next 12 to 18 months.

The decision not to appoint Metcalfe president was essentially Krause's. "3Com is fortunate to have a founder who has the maturity to do what is right for the company, even though his personal ambitions are not fulfilled," Krause said.

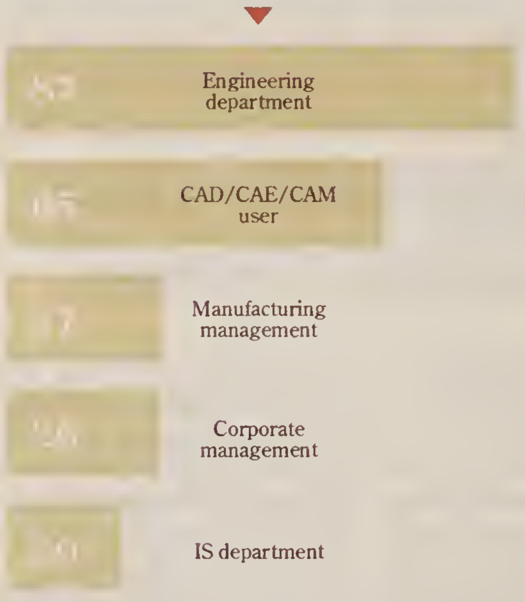
If Metcalfe does leave, Krause may not be far behind. He has been very open about a career plan that moves beyond 3Com, possibly into politics. But Krause does not foresee leaving 3Com prior to 1994 and said he'd "love to be chairman for life."

TRENDS

A preferred vendor list is a group of select software and/or turnkey vendors whose combined products constitute the entire CAD/CAE/CAM package.

Who is the major decision maker in software package selection?

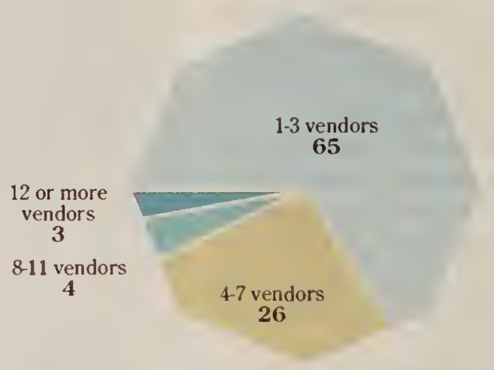
Number of respondents
(Base of 98—multiple responses allowed)



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS
CW CHART: TOM MONAHAN

How many vendors are on your preferred vendor list?

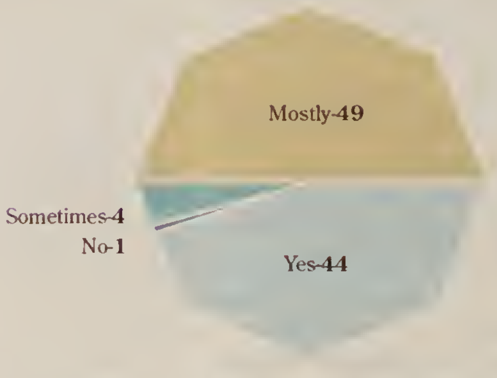
Number of respondents
(Base of 98)



The majority of preferred vendor lists are very short (one to three vendors). Thus, new vendors will find it extremely tough to get accepted into these select groups.

Do you feel that your preferred vendor list satisfies your needs?

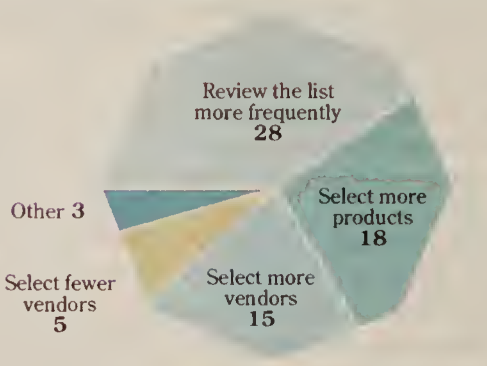
Number of respondents
(Base of 98—multiple responses allowed)



High satisfaction with preferred vendor lists may be directly related to the considerable role that engineering management and the actual users play in the vendor selection process.

If you are dissatisfied, how would you change that?

Number of respondents
(Base of 47—multiple responses allowed)



The majority of preferred vendor lists are very short (one to three vendors). Thus, new vendors will find it extremely tough to get accepted into these select groups.

NEXT WEEK

Motivating technical ▸ staff and the management of information has always fascinated **Sheldon J. Laube,** who recently was named CIO at Price Waterhouse. Manager's Journal profiles Laube and a firm where technological commitment extends to the purchase of 10,000 copies of Lotus Development Corp.'s new Notes software.

JOHN MARTINI

Ever wonder, as you read product reviews, what users would say if someone asked them? Stop wondering and start checking Buyers' Scorecard, a new monthly feature of Product Spotlight that provides user ratings of products. The first topic is network management, which covers SNA environments and multivendor network management.

INSIDE LINES

Our hearts are down in RIOS

Sources said last week that IBM will roll out its next-generation reduced instruction set computing systems, dubbed RIOS by many, the week of Feb. 12, and some predicted the traditional Tuesday will be bypassed for a Feb. 16 date — we say compromise and hold it on Valentine's Day 'cuz it's sure to be a love-in. The bicoastal announcement will reportedly draw top-circle IBM executives and a broad array of software partners. One customer admitted to having recently received a system but couldn't be coaxed to say anything further. The RISC-based boxes, said to feature multiple-instruction CPU cycles, will be joined by some new PS/2 cousins and the latest version of AIX.

Through a looking glass . . .

AT&T Bell Laboratories is expected to announce a breakthrough in optical computing today. The Holmdel, N.J., lab claims that its experimental digital optical processor, while a comparatively primitive chip, demonstrates the feasibility of optical processing. In theory, optical processors will be at least 1,000 times faster than conventional, silicon-based devices. This is because they will not suffer the slowing effects of electrical resistance and because they inherently feature a parallel architecture and so avoid von Neumann bottlenecks.

You want net management? You got it

As if users didn't have enough so-called integrated network management systems to choose from, now the regional Bell holding companies are getting into the act. At the Communication Network show in Washington, D.C., the week of Feb. 5, Nynex will officially announce the platform it sketched out at a user seminar last September, and Ameritech and Westinghouse Communications Software will announce a jointly developed "real-time" multivendor net management system.

Grim reminder

In her summation to the jury in the trial of Robert T. Morris in a federal district court in Syracuse, N.Y., last week, federal prosecutor Ellen Meltzer hammered on the point that just because the worm uncovered security holes, Morris should not be thanked for his act. "You don't thank a terrorist for improving airline security," she said. Jurors no doubt did not need to be reminded of that fact. It was only a little more than year ago that more than 30 families in the Syracuse area lost relatives in the terrorist bombing of Pam Am flight 103 over Lockerbie, Scotland.

Change partners or strange partners?

Where will the outsourcing craze end? IBM is rumored to have contacted none other than Hewlett-Packard about the possibility of running HP's data center operations, according to Nolan, Norton & Co. managing partner Bill Kelvie.

Step aside, Robert Ludlum

Clifford Stoll, who documented his year-long quest to trap a trio of computer hackers out to steal government secrets in *The Cuckoo's Egg,* will testify in the trial of two of the hackers this week in Celle, a suburb of Hannover, West Germany. The third hacker apparently committed suicide, though under somewhat unusual circumstances — his charred bones were discovered in a forest outside of Hannover. Stoll's book recounts how Robert Morris Sr., chief computer scientist for the National Security Agency, drove him to a meeting while chain-smoking with the auto's windows rolled up. "As I recall, [Stoll] said that he was nearly asphyxiated," said Paul Graham, a friend of Robert T. Morris, during a trial recess. "I wish he had been," replied Morris the younger, evidently displeased by the book's characterization of his father as eccentric.

And on a final note . . . Morris-the-convicted testified during his trial that he repeatedly bypassed the security of computers at Bell Labs when he was in high school. Bell Labs, he said, gave him summer jobs as a programmer while he was a high school senior and college freshman on the condition that he stop. We wonder if they gave him a recommendation to Cornell. And if that don't beat all, call in to 800-343-6474 and tell News Editor Pete Bartolik exactly what does.

Coming Soon, A Vision Of The Future Of Computing That Begins With A Bridge To The Past.

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SAA is the foundation for the new decade of enterprisewide computing. This free Integral/IBM Conference will give you the information you need to implement SAA solutions safely, efficiently and cost effectively.

Conference Schedule

Atlanta	April 17
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Chicago	March 22
Cincinnati	April 24
Cleveland	April 19
Dallas	March 20
Denver	May 2
Des Moines	May 22
Detroit	March 29
Ft. Lauderdale	April 19
Grand Rapids	April 3
Hartford	March 21
Honolulu	May 15
Houston	March 15
Indianapolis	May 2
Kansas City	March 27
Los Angeles	March 7
Louisville	May 17
Milwaukee	March 27
Minneapolis	March 13
Nashville	April 24
Newport Beach	March 8
New York	March 13
New York	March 14
Oklahoma City	April 17
Omaha	May 3
Philadelphia	March 8
Phoenix	May 3
Pittsburgh	March 29
Portland	April 25
Raleigh	May 10
Richmond	March 28
San Francisco	March 6
Seattle	May 8
St. Louis	May 1
Toronto	March 22
Vancouver	May 1
Washington, D.C	March 15

REGISTER NOW! THE CONFERENCE IS FREE — BUT SPACE IS LIMITED

For immediate registration call the Integral/IBM Conference Registration Desk at **800/824-8199**, in California **800/824-8198**, in Canada **415/939-3900**.

Don't delay. Do it today or you might miss the year's most important conference.